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ABSTRACT

This report provides Kentucky policymakers with information on economic, educational, demographic, and environmental trends and issues with implications for policy decisions. Following an introduction, "Past as Prologue" (James C. Klotter), the 28 chapters are presented in 5 sections: "The White Picket Fence: Trends Affecting the Quality of Life in Kentucky Communities"; "Our Emerging Culture of Learning"; "Our Changing Economy"; "Environmental Trends and Futures"; and "Government and Civic Participation." Chapters are: "Migration in Kentucky: Will the Circle Be Unbroken?" (Michael Price); "Growing Old in Kentucky: The Approaching Age of Age" (Graham D. Rowles, John F. Watkins); "Families and Children: The Common Wealth of Kentucky" (Stephan M. Wilson); "Poverty in Kentucky" (Miriam Fordham, Dan Jacovitch); "Assessing the Future of Housing in Kentucky" (F. Lynn Luallen); "The View from the Heart of the Health Care Revolution" (Forrest Calico); "The Contours of Crime" (John Curra); "Kentucky and the State of Human Rights" (Saundra C. Ardrey); "The Earnings of Dropouts and High School Enrollments: Evidence from the Coal Boom and Bust" (Dan Black, Kermit Daniel, Seth Sanders); "Trends and Issues Affecting Primary and Secondary Education" (Robert F. Sexton, Stephen K. Clements); "The Ivory Tower Under Siege" (Michal Smith-Mello); "Workforce Training Issues" (Stephan J. Goetz); "Industry Trends: Jobs and Earnings" (Stephan J. Goetz, Peter Schirmer); "Occupational Trends: Education, Technology, Trade, and Corporate Restructuring" (Peter Schirmer, Stephan J. Goetz); "Kentucky's Coal Industry: Historical Trends and Future Opportunities" (Gerald A. Weisenfluh, James C. Cobb, John C. Ferm, Carol L. Ruthven); "The Volatile and Uncertain Outlook for Tobacco in Kentucky" (William M. Snell); "Negotiating the New Social Contract" (Michal Smith-Mello); "Income Inequality in Kentucky" (Amitabh Chandra); "Trends and Future Values in Technology" (Dick Dedic); "Ready or Not: Kentucky in the Global Economy" (Chris Sauer); "Agricultural Exports: Opportunities for Kentucky's Farmers" (Michael Reed); "Kentucky's Transportation System: Current Trends and Future Issues" (Ted Grossardt); "Information Technology: Perspectives and Trends" (Doug Robinson); "Kentucky's Environmental Trends: Progress and Problems" (Leslie Cole); "Kentucky's Economic Trends and Environmental Futures" (Peter B. Meyer); "Trends in Kentucky Taxes and Their Implications for Future Tax Policy" (William H. Hoyt); "$5.8 Billion and Change: An Exploration of Long-Term Budgetary Trends" (Peter Schirmer, Michael T. Childress, Charles C. Nett);

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and "Trends in Civic Participation" (Paul Blanchard). (Contains references in each chapter, approximately 125 figures and data tables, a glossary, and author profiles.) (SV)

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EXPLORING THE FRONTIER OF THE FUTURE

How Kentucky will live, learn and work

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THE KENTUCKY LONG-TERM POLICY RESEARCH CENTER

EXPLORING THE FRONTIER OF THE FUTURE

How Kentucky will live, learn and work

Edited by
Michael T. Childress
Billie M. Sebastian
Peter Schirmer
Michal Smith-Mello

DECEMBER 1996

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The Kentucky Long-Term Policy Research Center was created by the General Assembly in 1992 to bring a broader context to the decisionmaking process. The Center's mission is to illuminate the long-range implications of current policies, emerging issues, and trends influencing the Commonwealth's future. The Center has a responsibility to identify and study issues of long-term significance to the Commonwealth and to serve as a mechanism for coordinating resources and groups to focus on long-range planning.

In Memory of

Vic Hellard, Jr.

1939-1996

"It's easy to attack government—easy but wrongheaded. For government is as good as we are. The plain fact is, we are government."

Vic Hellard, 1996

The staff and the Board of the Kentucky Long-Term Policy Research dedicate this, our second biennial trends report, to the memory of our colleague and our friend, Vic Hellard, Jr., without whom neither this volume nor this Center would exist. As in so many instances, Vic was the behind-the-scenes innovator who recognized and advanced the concept of a future-oriented research center that would examine and report on the long-range implications of public policy. We are here today, reporting on trends influencing the future before the Commonwealth, because of Vic Hellard. Just as he championed and helped shape an independent General Assembly, he envisioned an agency dedicated to informing and enriching the public dialogue about the future. With this volume and in all the work we do, we are striving to realize this vision.

But Vic was so much more than a man of ideas. Until his death on September 17, 1996, Vic served as a driving force on the Center's Board of Directors, providing invaluable direction and guidance, shepherding us through our early years, tirelessly promoting Center research and initiatives in the public arena, and dedicating immense energy to the Board's roll-up-your-sleeves work. For all of us, Vic was an inspiration and a compass. He was a public servant in the truest sense of the word, who kept the good of the Commonwealth at heart and quietly led with the power of his ideas. What's more, Vic was a kind and caring man who gave generously of himself. To say that he is sadly missed is to say too little. Instead, we offer this work not only in memory of Vic Hellard, Jr., but as a small part of his immense but often unsung legacy.

Preface

This report was prepared as part of the Kentucky Long-Term Policy Research Center's mission to serve as a catalyst to change the way decisions are made in government by providing policymakers a broader context in which to make decisions, taking into consideration the long-term implications of policy, critical trends, and emerging issues which may have a significant impact on the state. This, our second biennial trends report, includes articles from experts in a variety of fields who contributed chapters on subjects ranging from demographic trends to citizen participation in government. It will be of particular interest to policymakers and citizens who are concerned about improving prospects for a bright future in the Commonwealth.

Several of our authors examine trends in financial and economic data, such as wages, government spending, and income. In cases where they adjusted to real dollars they had to use the consumer price index (CPI), as these chapters were written during the spring and summer of 1996. This is significant because in December of 1996, a congressionally appointed panel presented recommendations to improve the government's measure of inflation. The panel also estimated that the CPI overstates inflation by a percentage point or more each year. As a result, time-series economic and financial data, when adjusted to real dollars using the CPI, would tend to *understate* real growth. Thus, using a new measure of inflation, real wages, for example, would have grown faster than they appear to when using the CPI to adjust the data.

KENTUCKY LONG-TERM POLICY RESEARCH CENTER

The Kentucky Long-Term Policy Research Center was created by the General Assembly in 1992 to bring a broader context to the decision-making process. The Center's mission is to illuminate the long-range implications of current policies, emerging issues, and trends influencing the Commonwealth's future. The Center has a responsibility to identify and study issues of long-term significance to the Commonwealth and to serve as a mechanism for coordinating resources and groups to focus on long-term planning.

Governing the Kentucky Long-Term Policy Research Center is a 21-member board of directors that includes four appointees from the executive branch, six from the legislative branch, and 11 at-large members representing citizen groups, universities, local governments, and the private sector. From the at-large component of the board, six members are appointed by the Governor and five by the Legislative Research Commission. In accordance with its authorizing legislation, the Center is attached to the legislative branch of Kentucky state government. The makeup of its board, however, affords it functional independence and permits it to serve both the executive and legislative branches of government equally, as well as the public.

Michael T. Childress is the executive director of the Center. Those interested in further information about the Kentucky Long-Term Policy Research Center should contact his office directly:

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Frankfort, KY 40601-8204

Foreword

On behalf of the Board of Directors and the staff of the Kentucky Long-Term Policy Research Center, I am pleased to present our second biennial trends report—*Exploring the Frontier of the Future: How Kentucky Will Live, Learn, and Work*. It contains a lively and provocative discussion of issues and trends that will significantly affect Kentucky's future.

Of course, both positive and negative trends are identified in this report, as well as a healthy dose of uncertainty. It has become a *cliché* in recent years, but bears repeating here: The only certainty about the future is change. Nevertheless, the trends identified by the contributors to this report need to be seriously considered by those interested in the future of our state.

None of these trends is etched into stone. We, the citizens of Kentucky, possess the power to shape the course of our future, and this discussion should inform our efforts to do so. I am reminded of a passage from *A Christmas Carol*, by Charles Dickens:

> *"Are these the shadows of the things that Will be, or are they shadows of things that May be, only? . . . Men's courses will foreshadow certain ends, to which, if persevered in, they must lead . . . But if the courses be departed from, the ends will change."*

We believe, as Dickens sought to show us in his timeless story of renewal and reversal of fortunes, that we indeed can affect the course of our state's future. Moreover, we believe that policymakers and citizens alike can use this report to help chart a path toward a more prosperous and more enlightened future. The key to Kentucky's future lies in our ability to embrace change while respecting our traditions and our history.

Dr. Paul B. Cook
Chair of the Board

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Glossary

ABFP	American Board of Family Practice
ACT	American College Testing
ADD	Area Development Districts
AFDC	Aid to Families with Dependent Children
AFL-CIO	American Federation of Labor–Congress of Industrial Organizations
AIDS	Acquired Immune Deficiency Syndrome
APA	American Press Association
ARTIMIS	Advanced Regional Traffic Interactive Management and Information System
BAC	Blood Alcohol Content
BEA	Bureau of Economic Analysis
BLS	Bureau of Labor Statistics
BT	Billion Tons
Btu	British thermal unit
CDC	Centers for Disease Control
CEM	Center for Environmental Management
CEO	Chief Executive Officer
CH_4	Methane
CNREP	Cabinet for Natural Resources and Environmental Protection
CO	Carbon Monoxide
CPS	Current Population Survey
DNA	Deoxyribonucleic Acid
EC	Electronic Commerce
EDI	Electronic Data Interchange
EFT	Electronic Funds Transfer
EPA	Environmental Protection Agency
EQC	Environmental Quality Commission
FDA	Food and Drug Administration
FDI	Foreign Direct Investment
FHA	Federal Housing Administration
FIRE	Finance, insurance, and real estate
FIVCO	Five County Development Area
FKEF	Forecasting Kentucky's Environmental Futures
FMCS	Federal Mediation and Conciliation Service
FY	Fiscal Year
GAO	General Accounting Office
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GIS	Geographic Information System
GPS	Global Positioning Systems
HAPs	Hazardous Air Pollutants
HB	House Bill
HEPI	Higher education price index
HMO	Health Maintenance Organization
HP	High-performance

HUD	U.S. Department of Housing and Urban Development
ISO 9000	Quality Standards set by the International Organization for Standardization
ISTEA	Intermodal Surface Transportation Efficiency Act
IT	Information Technology
ITS	Intelligent Transportation Systems
KERA	The Kentucky Education Reform Act
KHC	Kentucky Housing Corporation
KHIES	Kentucky Health Interview and Examination Survey
KIESD	Kentucky Institute for the Environment and Sustainable Development
KIH	Kentucky Information Highway
KIRIS	Kentucky Instructional Results Information System
LTPRC	Kentucky Long-Term Policy Research Center
MACED	Mountain Association for Community Economic Development
MIT	Massachusetts Institute of Technology
MSA	Metropolitan statistical area
MSW	Municipal Solid Waste
NAFTA	North American Free Trade Agreement
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NVRA	National Voter Registration Act of 1993
OPEC	Organization of Petroleum Exporting Countries
PCBs	Polychlorinated Biphenyl
PM-10	Particulate standard of 10 micrometers or less
PUMS	Public Use Microdata Samples
REIS	Regional Economic Information System
REMI	Regional Economic Models, Inc.
RIMS II	Regional input-output modeling system
SO_2	Sulfur Dioxide
TCPU	Transportation, communication and public utilities
TQM	Total Quality Management
USDA	United States Department of Agriculture
UV-B	Ultraviolet-B radiation
VOCs	Volatile Organic Compounds
WIM	Weigh-in-motion

Contributing Authors

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Paul Blanchard. Dr. Blanchard has served for 25 years on the political science faculty of Eastern Kentucky University, where he teaches courses on electoral and legislative behavior and Kentucky politics. He has degrees from the University of Michigan (A.B.), Southern Illinois University (M.A.), and the University of Kentucky (Ph.D.). He has been invited to address the topic of citizen participation in a variety of settings, most recently as an election-night analyst on KET. Earlier this year, he was named as one of three 1996 recipients of the "EKU Foundation Professorship," EKU's highest faculty award recognizing "creative, self-motivated exemplars of the ideal college professor."

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Past as Prologue

By James C. Klotter
Kentucky Historical Society

In the twenty-fourth century B.C., a writer introduced his work with the words, "Teach him what has been said in the past . . . for there is none born wise." In our era of such rapid change, almost daily, some question the need to look at a past moving so rapidly behind us. Others argue that we must only look forward, not at what has gone on before us. Yet, in truth, the need to study the past as we look to the future is greater than ever before.

One of the great constants in history has been change, of some sort, in every generation. Many ages try to avoid dealing with the transformation all around them; others try to adjust but operate in a historical vacuum. Those who do ignore history function without benefit of context. They do not understand how others before them adapted to change—failed to do so—and all they can do is to improvise, needlessly, over and over again, amid a series of crises. Reacting without perspective, they resemble those in Greek mythology who drank from the river Lethe in Hades. Those who sipped from the stream lost their memory and became endless wanderers, without purpose, without history, without direction. The Kentucky Long-Term Policy Research Center and those interested in Kentucky's future are seeking to make certain that future generations never drink from those waters.

At the same time, slavish devotion to the past is as dangerous as too little. Looking only backward, avoiding the need to confront and shape change, has been a debilitating trend at different times in Kentucky history. The key, then, is to identify what parts of the present and past to leave behind and what aspects to take forward into new eras. It is important not only to ask questions, but to understand what questions must be asked. Contributors to this biennial trends report not only identify current trends and place them in historical context, they also suggest what elements will most influence the Kentucky of the 21st century. They seek answers to the right questions.

Looking back over the 19th and 20th centuries, historians have noted a depressing trend, for the words spoken and the issues defined seem to be repeated from decade to decade. A public figure telling an audience that Kentucky needs better roads, more jobs, and more funds for education, could be found whether that audience arrived by horse-drawn carriage or by airplane. For example, an 1884 writer concluded that "The educational problem is by far the most serious of all the difficulties before this state." Over six decades later, a study emphasized the, "Amazingly high degree of correlation between what a state invests in education and the standard of living of its people." Some 30 years after that an ex-governor declared, "You can't have a progressive state without an adequate educational system."

On issue after issue, year after year, words were heard calling for change. What is the role of government in the state? What about gender and racial equality? Opportunities for young people? Out-of-state ownership of vital industries? And on and on. Moreover, Kentuckians spoke about what might be called the soul of the state. How can we keep that which gives us a sense of place, a personality, a uniqueness? How can we make certain we think locally *and* globally? How can we ensure we are both history-minded *and* future-minded? Governor Bert Combs, in his last speech as chief executive, spoke for that concern when he concluded, in 1963, "These have been years of great change in the world and in our state . . . Yet . . . it is the spirit that survives, and the spirit of Kentucky is strong. We may change . . . but the spirit of Kentucky endures." Barry Bingham, Sr., spoke to those same desires for both change and continuity when he explained what his hometown sought, which was, in a sense, what Kentucky desired as well: "What we want is a modern city that still remembers the past, as old bricks remember the sun of many summers and the soft rains of a hundred autumns. That is what gives them character and beauty." Kentuckians seek to build their future on such solid foundations.

Can we? Looking at past studies and recommendations for change sometimes does not provide a hopeful answer. At the end of World War II, for instance, three different book-length works offered blueprints for Kentucky's next half-century. They called for a new constitution, higher teachers' salaries, better access to medical care, more environmental controls, a higher minimum wage, greater emphasis on historical and tourist site development, and further economic diversity, among other things. As one reads these words now, many of the suggestions still address our current needs.

Yet on the other hand, reviewing past decades also provides hope for the future; historical study shows that individuals can make a difference, and that major change has taken place in many arenas. To name only a few examples, Kentuckians of 1900 lived in a racially segregated society, with women in a second-class status, by law; most lived in a world without electricity or security for the aged, a place of poor health care and shorter lives, a neighborhood of limited transportation, geography, and communication.

As the children and grandchildren and great-grandchildren of those Kentuckians, we often think, as we look to the future, that no other generation has had to deal with change in the magnitude that we now face. In many ways, that is correct. However, each generation has faced its own circumstances and has experienced transformation as a result. For example, that generation of 1900 soon saw humans fly in heavier-than-air machines for the first time; people no longer were bound to the Earth, a huge mental jump for them to make. The generation of World War II had to face great destruction and death. The post World War II generation has witnessed different types of change: trips that previously took months now take a day; information that would take weeks or days to be assembled and disseminated now emanates in minutes or hours. The state moved from an agricultural economy to a more diversified one, and became statistically more urban than rural. At the same time poverty, inequality, and other issues continued. In short, each Kentucky generation has faced challenges and change, perhaps as great to them as those in the 21st century will be to another generation.

Over a half-century ago, one futurist study for the Commonwealth proclaimed, "We are at the end of an epoch . . . Kentucky's true greatness lies ahead." If we repeat those words now, the possibility of making them come true is much greater now than before.

A participant in another place told of the spirit that Governor Combs spoke about, a spirit present in Kentucky as it moved toward statehood over two centuries ago. After a frontier battle, one of the participants wrote, "On the morrow we shall bury them. We shall weep for them, as we have for all who have died, but we shall go on living, and one day we shall overcome this perilous wilderness."

With that attitude and will, early Kentuckians did persevere and succeed. Kentucky's present generation faces its own perils, and, like that earlier one, its own promises as well. Physical frontiers, such as space, may still exist, but the primary frontiers to be conquered now are more those of technology and of the mind. Yet that same frontier spirit can prevail, with planning, with leadership, with long-term thinking.

Over a half-century ago, one futurist study for the Commonwealth proclaimed, "We are at the end of an epoch . . . Kentucky's true greatness lies ahead." If we repeat those words now, the possibility of making them come true is much greater now than before. This trends report allows us to plan for future epochs, as it helps us realize also that "there is none born wise."

Section I

The White Picket Fence: Trends Affecting the Quality of Life in Kentucky Communities[*]

The poet Maya Angelou once said that all people are linked by the dream of a white picket fence. She explained that we all desire satisfying work, a healthy family, and a house, yard and flowers surrounded by a white picket fence. The fence borders a tree-lined street with a variety of houses and fences. Two or three blocks away is a major thoroughfare where we can ride a bus or drive our car past the neighborhood school and convenience center into a busy and prosperous downtown.

Just as we yearn for each picket fence to have a fresh coat of white paint, we want our neighborhood and city centers to be well designed and enjoyable. We want downtown to have a mix of special stores, banks, theaters, housing, offices, hospitals, libraries, and restaurants. We want this living center to exhibit the history of the community in its businesses, buildings, monuments, festivals, parades and parks. While we are proud of our efficient new shopping malls on the edge of town, we know they are not a substitute for the downtown heart of the community.

The phrase "quality of life" is being used by more people to describe a desirable community, and in the future quality of life will continue to gain credence in more segments of society. Decisions about business location and expansion will consider small towns as well as larger cities for their quality of life. Young professionals looking to relocate and take new jobs will also review one-by-one such aspects of quality as housing, schools, medical services, historic buildings and sites, law enforcement, libraries, transportation, shops, festivals, sports, arts and entertainment, parks, and museums.

On the surface, the combination of well-cared-for neighborhoods and schools, shiny shopping malls, active theaters and museums, and a vibrant downtown center create the image of a high quality of life within the community. A look beneath the surface, however, reveals the need for critical ingredients such as diverse economic and educational opportunities, concern for good design, respect for history, accessible cultural resources, a plan/vision for the future, strong families, and broad citizen participation in community leadership.

What are the trends that impact our quality of life? Certainly, there are basic needs, like housing, health care, safety, dignity, and strong families. Trends in these areas are examined in this section by: F. Lynn Luallen, *Housing Trends*; Forrest Calico, *The View from the Heart of the Health Care Revolution*; John Curra, *The Contours of Crime*; Saundra Ardrey, *Kentucky and the State of Human Rights;* and Stephan Wilson, *Families and Children.* Another basic need that affects our quality of life is a job paying adequate wages, something a large segment of our population obviously lacks, as highlighted by Miriam Fordham and Dan Jacovitch in their chapter, *Poverty in Kentucky.* There is clearly a need for broad access to lifelong education and training to maintain and improve personal knowledge and income.

Another important trend is the expanding recognition of the importance of heritage and history to the lives of citizens within communities, and to tourists from outside the community. Well built and historically significant buildings are being re-used for housing and commercial developments because, in addition to saving resources, they preserve the heritage of a community and provide a tourist attraction.

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[*] This introduction was prepared by Lou DeLuca, the Executive Director, Office of Operations and Development, within the Education, Arts and Humanities Cabinet.

Graham Rowles and John Watkins describe the trend toward an older population and longer retirements in their chapter, *Growing Old in Kentucky in the Approaching Age of Age.* The aging of the population provides a growing audience with interest in heritage, history, arts, and crafts. A companion trend has been the out-migration from Kentucky of a younger, educated population looking for a "better life." Perhaps the most interesting new trend is the movement of these same young people, as well as many older professionals, back from large cities to smaller communities in order to improve their quality of life, as discussed by Michael Price in *Migration in Kentucky.* These educated citizens will demand that their communities develop their local museums, housing options, historic buildings, public libraries, arts performances, and downtown design in order to meet their standards of quality.

Increased access to lifelong education, heritage, arts, and humanities will also be achieved through easily accessible "virtual universities," on-line public libraries, inter-active local history museums, and arts performances in the workplace. Equally important will be the trend toward "one stop shopping" which results from the increased demands on family time and increased hours devoted to work. An example is the packaging and marketing of convenient parking and dining as part of an evening out at the theater. Likewise, a community that wants to attract tourists interested in heritage and arts will package those attractions with lodging, dining and shopping.

The desire for an improved quality of life is evidenced in the *Kentucky Strategic Plan for Economic Development* which calls for government to "promote and develop Kentucky's cultural and historical assets as an economic tool because Kentucky has a rich culture and history which help define the Commonwealth's identity and quality of life."

As communities see the need to develop their cultural assets, they will include cultural planning and development in their community economic/tourism development plan. The trend toward collaborative economic and cultural planning will have an impact on local communities as well as on state government. A good example is Governor Patton's announcement of *Renaissance Kentucky,* a program which seeks to improve Kentucky downtowns, large and small, by linking economic development with housing, tourism, infrastructure, urban design, and cultural development. Also recognizing this need, the Kentucky Education, Arts & Humanities Cabinet and its 13 member agencies launched a program in 1995 called the *Cultural Economics Initiative.* This program provided a small grant and technical assistance to 30 Kentucky communities to help them inventory and analyze their cultural/historic resources and integrate them into a larger economic development plan.

Community planning for the development of cultural assets as economic tools is of increasing importance because of other identified trends. Decreasing government and philanthropic funding for cultural institutions is creating a need for more earned income to sustain nonprofits, and more business sponsorship and marketing of events which provide exposure and good will such as education and community service. With the need to broaden the audience will come the need to offer audience-driven programming and "info-tainment," thereby requiring cultural institutions to adjust to entertaining as well as conveying content.

The education, arts and humanities community attempts to interpret the past and look to the future. As the level and accessibility of distance educational and cultural offerings increase, there will be a demand for an enhanced quality of life—the building of a community white picket fence—through more locally planned and produced education, arts, heritage, environmental, and humanities programs.

Migration in Kentucky: Will the Circle Be Unbroken?

Kentucky's migration history for much of the 20th century reveals an exodus from rural areas and an attraction of migrants to the state's urban areas. Out-migration has resulted in a brain drain for rural areas because newcomers to the state's rural areas have been less educated than those leaving; on the other hand, recent migration in urban areas has enhanced the human capital of the state, as those coming in are slightly more educated than those leaving. Overall, migration signifies two important trends in Kentucky for the next century: the aging of the population and non-economic migration.

By Michael Price*
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In this twentieth century, Kentucky's most characteristic demographic event has been the departure of our native sons and daughters. The out-migration of young adults has plagued communities from Louisville to Pikeville to Fulton, often signifying opportunities lost for the places left behind. From 1910 to 1990, migrants leaving Kentucky have outnumbered those moving to the state by over one million. In the 1950s alone, the exchange of migrants over the state border resulted in a net loss of nearly 400,000 people. As the consequence of out-migration over decades, two of every five native-born Kentuckians alive in 1990 lived outside the Commonwealth.[1]

From 1990 to 1995, however, the tide of migration streams turned, and 82,000 more people moved into Kentucky than moved out. The only other period of sustained net in-migration in this century occurred during the 1970s. Is this recent population turnaround a harbinger of our demographic future as we enter the next century? Or is it only a temporary aberration, a short-lived demographic event that portends little about the size and composition of our communities or our emerging social order?

Recent migration to Kentucky has often been a homecoming. Many who left the state in their youth have returned for their retirement years. Among those 55 years old or older, one of every two migrants moving to Kentucky during the 1985-90 period was a native born Kentuckian.[2] This return of the natives is significant, not for the current volume of migration, but because it is part and parcel of more salient social demographic trends dealing with an aging population and non-economic migration.

In this chapter, we look at migration in Kentucky. To better understand where Kentucky is going, we need to better understand how Kentuckians are moving. One of the basic tenets of migration theory states that for every migration stream there is a counterstream.[3] Through this selective exchange of people and households, migration impacts the size, composition, and distribution of the population. Although migration has become an increasingly important component of growth and change in Kentucky, our knowledge of migration is often limited to the residual of the demographic equation.[4] The examination of migration residuals or nets shows how much a population changes as the result of the movement of people, but not how it changes. Migration activity is better explained

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* The author wishes to thank Drs. Thomas Ford and John F. Watkins for their reviews and significant contributions to an earlier draft of this paper, and Martye Scobee and Thomas Sawyer for their technical assistance.

[1] U.S. Bureau of the Census. *1990 Census of population and housing*. Public Use Microdata Samples (PUMS). United States (1 percent).

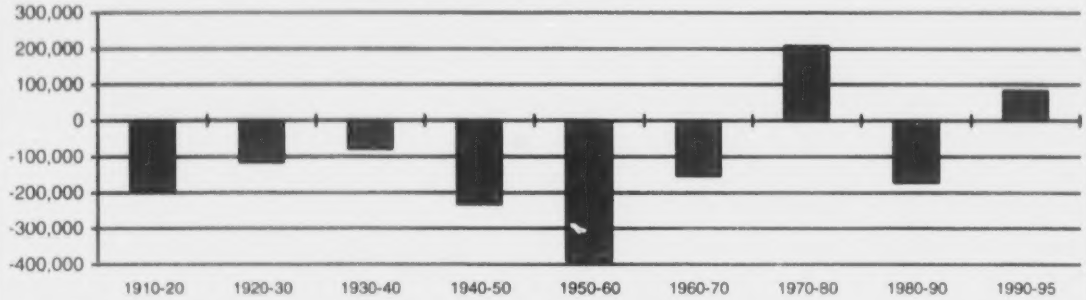
[2] U.S. Bureau of the Census. *1990 Census of population and housing*. Public Use Microdata Samples (PUMS). Kentucky (5 percent).

[3] Ravenstein, E. G. (1885, June). The laws of migration. *Journal of the Royal Statistical Society, 48*, Part 2.

[4] Net migration over a specific period is equal to the population at the end of the period minus the population at the beginning, minus live births plus deaths occurring over the period.

by looking at the volume and characteristics of migrants moving in and those moving out. This chapter examines not only Kentucky's history of net migration, but also the age and education of recent in-migrants and out-migrants, and discusses implications of these trends for Kentucky in the next century.

FIGURE 1.1
Net Migration in Kentucky, 1910-1995



Source: US Department of Agriculture, Economic Research Service and calculations of author.

Rural Losses and Urban Gains

Kentucky's migration history in the 20th century reveals a dramatic pattern of uneven development between rural and urban areas. Urban-rural are defined herein by the Census Bureau's metropolitan county designation. Metropolitan status is examined after each census based on changes in population size and density, commuting patterns, and employment composition. Urban areas have generally had net gains from migration in this century, resulting in the exchange of relatively large volumes of in- and out-migrants (see, for example, Table 1.3). However, a massive exodus from rural areas has often overshadowed net in-migration in the state's urban areas. As shown in Table 1.1, from 1940 to 1970, rural Kentucky had net out-migration of 900,000. Meanwhile, the state's urban areas attracted 136,000 more migrants than departed. During the 1950s, net migration decreased the population of rural areas by 20 percent.

TABLE 1.1
Net Migration in Urban and Rural Kentucky 1940-1995*

	State		Urban Areas**		Rural Areas**	
Period	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
1940-1950	-232,431	-8.2	83,119	11.8	-315,550	-14.7
1950-1960	-389,546	-13.2	33,535	4.0	-423,081	-20.2
1960-1970	-154,046	-5.1	19,589	1.7	-173,635	-9.1
1970-1980	206,237	6.4	269	0.0	205,968	12.0
1980-1990	-171,678	-4.7	-68,283	-4.1	-103,395	-5.2
1990-1995	81,862	2.2	23,711	1.3	58,151	3.0

** Percent net migration is the net migration number divided by the population at the beginning of the period multiplied by 100.*

*** Urban areas are metropolitan counties and rural areas are nonmetropolitan counties as designated at the end of each time period.*

Sources: US Department of Agriculture, Economic Research Service and Calculations of author.

Many of those who left have been young adults. During the out-migration of the 1950s, Kentucky experienced a net loss of 134,000 persons who were 20-29 years old, 30 percent of this age cohort. Young persons have a general propensity to move more than other segments of the population. Life-cycle options dealing with higher education, career choice, and marriage often involve relocation. Young people in Kentucky, especially those from rural areas, have been the most likely to leave home. Rates of net out-migration for young adults, as shown in Table 1.2, have been two to three times greater than those for the total population since 1950.

TABLE 1.2
Net Migration by Age in Kentucky, 1950-1990

	1950-1960		1960-1970		1970-1980		1980-1990	
	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%
All Ages	-389	-13.2	-154	-5.1	206	6.4	-171	-4.7
0-9	-54	-8.6	-27	-4.1	14	2.4	-17	-3.1
10-19	-77	-15.1	-17	-3.1	67	10.4	-31	-5.1
20-29	-133	-29.8	-86	-23.6	10	2.3	-74	-12.0
30-39	-66	-16.8	-17	-4.6	32	9.3	-22	-4.6
40-49	-32	-9.7	-6	-1.7	25	7.0	-16	-4.6
50-59	-17	-6.4	-2	-0.8	22	6.9	-2	-0.8
60-69	-4	-2.1	4	2.2	20	8.1	17	0.0
70 and over	-2	-2.0	-1	-0.9	12	5.8	-6	-1.9

** Age is measured as of end of each decade.*

Sources: US Department of Agriculture, Economic Research Service, and calculations of author.

Moreover, migration has depleted rural Kentucky of its most valuable human resources. Out-migration has selected not only the young, but often the more educated, ambitious, and courageous. The out-migration of young adults over decades has contributed to an undereducated workforce and a decline in fertility in rural areas. The more educated and skilled often find local job opportunities limited; their resultant departure decreases the human capital of the labor force. Young adults are also the most fertile segment of the population and their loss in combination with declining birth rates has resulted in a drop in the number of births in many rural areas.

Urban areas in Kentucky, on the other hand, have generally attracted migrants. Cities and suburbs have collectively experienced net in-migration in every decade since 1940, except the 1970-80 decade. Over this century, Kentucky's urban areas have ridden the waves of industrial growth, deindustrialization, and postindustrial development. Each wave of development has been associated with major population movements. In the first half of the century, rural to urban migration enabled Ashland, Covington, Louisville, and other cities to meet the massive labor requirements of industrialization. Beginning in the 1970s, the downsizing of manufacturing and the deindustrialization associated with the Rust Belt coincided with the labor force entrance of the first Baby Boomers. An oversupply of labor resulted in out-migration from Kentucky's major cities. Kentucky's urban areas, however, have led the state into the transition from a goods-producing economy to one based on information. Exemplified by the growth of Lexington, Kentucky's cities currently compete for skilled and educated workers in a national and global marketplace.

TABLE 1.3
In-migrants and Out-migrants by Age, Urban and Rural Kentucky, 1985-1990

	State Migrants				Urban Migrants				Rural Migrants			
	In		Out		In		Out		In		Out	
	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%
All Migrants (5+ yrs, 1990)	304	100	298	100	218	100	210	100	189	100	191	100
5-19	78	25.7	73	24.5	50	23.0	50	23.8	53	28.0	48	25.2
20-29	85	28.2	92	30.9	69	32.0	61	29.0	49	26.3	64	34.0
30-44	87	28.7	85	28.7	64	29.4	63	30.4	48	25.6	47	24.6
45-64	37	12.3	31	10.7	23	10.6	24	11.6	26	13.8	19	10.3
65+	15	5.1	15	5.2	10	5.0	11	5.2	11	6.2	11	5.9

Source: 1990 Census of Population and Housing, STP28-Special County to County Migration Tally.

As the state's urban populations have grown, they have become more dispersed. Out-migration from the state's older, industrial central cities has been countered by growth in the suburbs and exurban areas. Metropolitan counties[5] in Kentucky have steadily increased in number from six in 1960 to eight in 1970, 17 in 1980, 20 in 1990, and 22 in 1995. Moreover, peripheral metropolitan counties, those without a major central city, like Boone and Oldham, have been among the fastest growing counties in the state over the last three decades.

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[5] Metropolitan counties are those that comprise Metropolitan Statistical Areas (MSAs), a Census Bureau designation. Counties are added to MSAs based on thresholds of population density and growth, commuting patterns, and employment structure.

Rural Growth in the 1970s

The only decade of sustained population growth and net in-migration for rural Kentucky in this century was the 1970s. Migrants to rural Kentucky in this decade outnumbered those leaving by over 200,000. The Kentucky experience was part of a national rural renaissance, and several factors contributed to this population turnaround. The oil embargo by Middle East nations led to increased production and speculation in Kentucky's fossil fuel industries. Employment in coal mining also increased. In addition, innovations in production and transportation facilitated the relocation of manufacturing firms to rural locales to take advantage of lower labor and other costs. As a result, the demand for rural labor increased, retaining local workers and attracting newcomers. These economic factors were complimented by urban to rural migration that was not economically motivated. Many moved to rural areas to enhance the quality of their lives, removing themselves from the congestion, pollution, and rat race associated with urban life. Rural areas presented the promise of a simpler, more gratifying lifestyle.[6]

Kentucky's rural turnaround was short-lived, however. By the end of the 1970s, demand for rural workers had fallen and net out-migration had returned. During the 1980s, rural Kentucky experienced net out-migration once again, losing 100,000 people, 5 percent of its population.

Recent Migration

TABLE 1.4
In-migrants and Out-migrants by Age and Education, Urban and Rural Kentucky
1985-1990

	State Migrants				Urban Migrants				Rural Migrants			
	In		Out		In		Out		In		Out	
	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%	# (000s)	%
25 yrs & >	185	100	182	100	134	100	133	100	110	100	109	100
<HS Grad	35	19.3	32	17.9	20	15.0	22	17.1	32	29.0	26	23.9
HS Grad	47	25.8	46	25.5	32	24.0	33	25.0	32	29.3	30	27.5
HS & >	149	80.7	150	82.1	114	85.0	110	82.9	78	71.0	83	76.1
Some Coll	52	28.1	50	27.4	39	29.2	36	27.3	26	24.3	27	25.4
Degree & >	49	26.7	53	29.3	42	31.8	40	30.6	19	17.4	25	23.2
25-34 yrs	83	100	88	100	64	100	62	100	45	100	52	100
<HS Grad	9	11.8	10	11.6	6	9.8	6	10.9	8	18.0	8	15.3
HS Grad	22	27.2	22	25.8	15	23.9	15	24.8	14	32.9	14	28.6
HS & >	73	88.2	78	88.4	58	90.2	55	89.1	37	82.0	44	84.7
Some Coll	26	32.1	25	29.4	20	31.8	18	28.9	13	29.7	15	28.8
Degree & >	24	28.9	29	33.2	22	34.6	22	35.3	8	19.4	14	27.3
35-54 yrs	70	100	67	100	50	100	50	100	41	100	39	21.6
<HS Grad	12	17.1	10	15.4	6	12.5	7	14.3	10	26.4	8	28.7
HS Grad	18	25.4	17	25.6	12	24.2	12	25.4	12	29.6	11	78.4
HS & >	58	82.9	57	84.6	44	87.5	43	85.7	30	73.6	30	26.6
Some Coll	20	28.6	19	28.8	15	30.0	14	28.8	10	25.0	10	23.1
Degree & >	20	28.9	20	30.1	16	33.3	15	31.5	7	19.1	9	
55+ yrs	30	100	26	100	19	100	20	100	23	100	18	100
<HS Grad	13	44.7	11	45.0	7	38.8	8	43.4	12	54.9	9	53.5
HS Grad	7	23.1	6	24.0	4	23.8	4	24.6	5	21.7	3	21.8
HS & >	17	55.3	14	55.0	11	61.2	11	56.6	10	45.1	8	46.5
Some Coll	5	16.5	4	17.2	3	18.7	3	18.4	2	12.7	2	12.7
Degree & >	4	15.7	3	13.8	3	18.7	2	13.6	2	10.7	2	12.0

Source: 1990 Census of Population and Housing, STP28-Special County to County Migration Tally.

Following a decade of stagnant population growth, Kentucky in the 1990s has been on a growth trajectory. From 1980 to 1990, the state population rose by less than 1 percent. In the first half of this decade, however, the number of Kentuckians has increased by 173,000 or 5 percent. Recent growth has been fueled by net in-migration which has benefited rural areas more than urban areas. Net migration resulted in gains of 58,000 in rural areas and 24,000 in urban areas.

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[6] For a review of the rural population turnaround in the U.S. during the 1970s, see Brown, D.L. and Wardwell, J.M. (Eds.). (1980). *New directions in urban-rural migration: The population turnaround in rural America.* New York: Academic Press.

Many of the recent migrants to rural Kentucky have been older, beyond their fertile years. During the recent growth, fertility in rural Kentucky has decreased while mortality has increased. While these changes are primarily the result of aging in place of the population and a general decline in fertility rates, recent migration, by sometimes replacing the young with the old, has contributed to a shift in the balance of natural increase in rural areas.[7] Natural increase is the demographic term for population growth resulting from the difference between the number of births and deaths. As presented in Table 1.3, recent in-migrants to rural areas have been more likely than recent out-migrants to be aged 45 years and older; those leaving rural areas were more likely to be younger adults. During the 1985-1990 period, one third of the out-migrants from rural Kentucky were 20-29 years old.

Recent migration in Kentucky, moreover, has resulted in a brain drain for rural areas. Newcomers to the state's rural area have been less educated than those who left. As shown in Table 1.4, of migrants aged 25 years and over who exited rural areas during the 1985-1990 period, 23 percent had obtained a bachelor's degree or higher. Only 17 percent of the comparable in-migration stream were college educated. However, older migrants with less educational attainment may be lowering the overall education levels on the rural migration instream. However, even looking at the education of younger adults alone, the same pattern is shown. Recent migrants aged 25-34 years coming to rural Kentucky were less educated than their counterparts who left.

In urban areas of Kentucky, on the other hand, recent migration has reflected the dynamics of the postindustrial economy and the increasing demand for human capital. Gross migration, the sum of in- and out-streams, in urban areas has been 10 percent higher than in rural areas, and urban migrants whether entering or leaving are more educated than their rural counterparts. Roughly one third of recent in-migrants and out-migrants had a college degree. Those coming to urban areas, however, were slightly more educated than those leaving. Moreover, in-migrants were more likely to be young adults, 20-29 years old, than out-migrants. Migration in recent years has enhanced the human capital of the state's urban areas.

Implications for the 21st Century

As noted earlier, coming home is a significant aspect of recent migration in Kentucky. Given the volume of out-migration over past decades, one may speculate on the prospects for a massive return of natives in coming decades. Likely to increase in volume, this migration is important because it signifies two emerging trends for the next century. These trends are non-economic migration and the well documented aging of the population.

Non-economic migration is motivated by the desire to improve the quality of one's life more than one's economic condition. Rural homesteaders, part of the back-to-the-land movement, represent in many ways the essence of this migration; and while they are present in Kentucky, their numbers are small. Non-economic migration, however, is typically supported by economic means and includes the migration of retirees and the movement of urban populations to the rural fringe of metropolitan areas, two migration streams which are relatively large in Kentucky and expected to increase in volume.

Kentucky is very likely to be a major destination for retirees in the next century. The state's abundance of natural amenities is certainly a strong draw. Recent rural migration has been strongest to areas near the state's large recreational lakes, for example. States will be in competition with each other for retirees, much like they are today for automobile manufacturing plants. Competition will increase as Baby Boomers, who prepared for retirement with pensions, savings, and investments, exit the labor force.

Migration to the rural outskirts of the metropolitan areas reflects increases in household income and changes in the geography of economic activity. Although these trends generally indicate improvement in the quality of life, there are potential problems to consider. Residential developments push farther into the rural landscape often manifesting in gated enclaves for the well-off. The movement of urban workers and their families to the rural setting has involved, almost exclusively, the relocation of middle- and upper-income whites. The centrifugal redistribution of metropolitan populations has resulted in greater geographic separation among races and ethnic groups and between rich and poor. Louisville, Covington, and other central cities have become increasingly comprised of minority and poverty populations. Moreover, the movement of urbanites to rural areas on the metropolitan fringe can strain the institutional infrastructure of the receiving communities. Problems of institutional overload may arise as the influx of new migrants places demands in excess of the carrying capacity of local schools and services.

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[7] See Kentucky State Data Center. (1996, Spring/Summer). *Kentucky State Data Center News, 14*.

Despite a general shift in population towards the hinterland, rural areas have not stemmed the tide of youth migration. Recent population growth has masked the ongoing departure of young adults. The out-migration of youth, combined with the recent in-migration of retirees, has shifted the age structure of some rural areas towards the top. Consequently, from 1990 to 1995, the number of deaths exceeded the number of live births in 13 rural counties.[8] Unless areas such as these sustain a regular stream of in-migration, they will depopulate.

The long-term out-migration of young people has resulted in labor shortages, especially for entry level and seasonal workers. To fill this void, we see, at least anecdotally, the beginning of a new migration stream to Kentucky with origins south of the U.S. border. Migrant Latino farm laborers can be seen in Kentucky cutting and stripping tobacco. A chicken processing plant in a rural Kentucky county is raided by the Immigration and Naturalization Service for hiring illegal Hispanic aliens. Over time, seasonal farm labor migration has resulted in the permanent settlement of Latinos from Texas to Michigan. As Kentucky begins to participate in the mid-continent labor migration stream, we will see if Latino newcomers are readily accepted by the heretofore homogeneous host communities.

The influx of retirees and exurbanites brings new wealth to rural locales. Population growth also increases the demand for service jobs. Whether newcomers, however, will be a new source of vitality and entrepreneurship for their host communities is uncertain. Migrants may oppose economic development which they perceive as a threat to the rural lifestyle they desire. In addition, new residential uses of rural land compete with traditional agricultural land use, making it more difficult for farm families to stay in agriculture, especially from generation to generation. We can expect that many rural communities will be dramatically transformed *vis-à-vis* their differential flows of in- and out-migration.

That so many have wanted to come home, and have, bodes well for Kentucky. Moreover, since 1970, Kentucky has generally gained more migrants than we have lost; and the departure of young adults has slowed. Whether native or non-native, urban worker or rural retiree, Kentucky has become a desirable destination. We will see if returning natives help ease the problems so often associated with an influx of migrants. Sociocultural differences between newcomers and old-timers may lead to a conflict situation, or culture clash, in the values and normative expectations between the two groups. Hopefully, migrants coming home to Kentucky, who left years ago because of undesirable circumstances, are aware and concerned that many of those same problems persist for today's youth.

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[8] See Kentucky State Data Center. (1996, Spring/Summer). *Kentucky State Data Center News, 14.*

Growing Old in Kentucky:
The Approaching Age of Age

Circumstances are good and improving for some of the Commonwealth's elders in comparison with their peers nationally. For others, however, little has changed over the past few decades. Older Kentuckians remain disproportionately poor. Considerable regional variations exist in the economic status of our elderly population. With respect to some selected indicators, the situation of our elders may actually be deteriorating. Policymakers must consider how the next generation of elders will experience growing old in Kentucky. The experience will be what we choose to make it.

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Kentucky can be a wonderful place in which to grow old. For Arnold, a 67-year-old executive from Indianapolis and his wife (part of the small but significant stream of elderly migrants who have retired to Pulaski County on the shores of Lake Cumberland), our Commonwealth offers a temperate climate, natural scenic beauty, a slow pace of life, a low cost of living, and the chance to experience a genuine sense of rural community. For those with more urban tastes, like 73 year-old retired teacher Evelyn who moved to the state to be near her daughter, Lexington offers a range of upscale retirement community living options in an amenity-rich city well served by medical facilities and educational and cultural resources. There are opportunities to participate in the University of Kentucky's Donovan Scholars program,[1] to enjoy the resources of the Center for Creative Living, to dine at a wide range of restaurants, and even to spend a day at the races.

But there is also another Kentucky, a place experienced by large numbers of our less affluent and less fortunate elders. For Leroy, an 86-year-old lifelong resident of Owsley County who has both mobility and self care limitations, there is the day-to-day struggle of living alone in a substandard dwelling without a telephone, without access to a vehicle and on an income below poverty. For 88- year-old Cicely, a widow living in poor quality housing in inner city Louisville, problems of inadequate resources are exacerbated by fears of crime and violence and by the even more invidious slights of neglect. This Kentucky is not such a good place in which to grow old.

In this chapter, we summarize trends in the growth of Kentucky's elderly population and provide a description of the current status of this population with respect to an array of indices of life circumstances and well-being. We present the argument that circumstances for some of the Commonwealth's elders are good and improving in comparison with their peers in the remainder of the nation. However, for others little has changed over the past few decades. There remains considerable regional variation in the status of our elderly population. Especially in the eastern portion of the state, there has been little improvement with respect to multiple indices of well-being. Indeed, with respect to selected indicators, the situation of some of our elders may actually be deteriorating.

Against this backdrop, we identify several recent trends, both national and local, that are likely to shape the future of Kentucky's elderly population. Finally, we present a somewhat speculative look into the crystal ball to present an image of the future of aging in our state and what we can do to ensure that it is a bright one for all Kentuckians.

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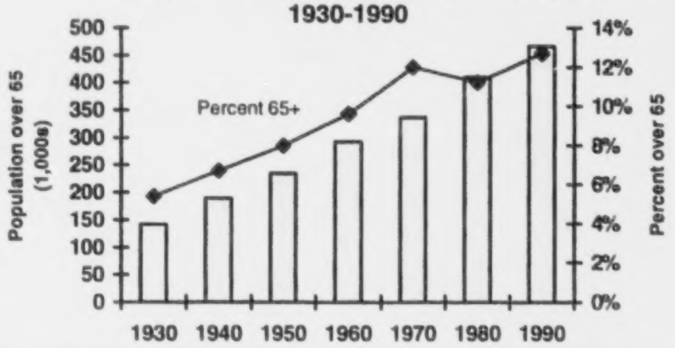
[1] The Donovan Scholars program provides free educational opportunities for senior citizens.

Trends in the Growth of Kentucky's Elderly Population

FIGURE 2.1
Changes in Kentucky's Elderly Population, 1930-1990



In 1930, the elderly population of Kentucky numbered just over 142,000, less than a third of today's figure. During the early part of the century, the elderly nationwide accounted for a relatively small share of the total population; Kentucky was no exception with an elderly percentage of about 5.4 in 1930. The decades following 1930 signaled a period of rapid population growth for the elderly that continues today. By 1950, elders accounted for 8.0 percent of the state total (or about 235,000 persons aged 65 and over) and by 1970 these levels increased to 12.0 percent or 337,000 individuals (Figure 2.1). By 1990 there were 465,068 Kentucky residents 65 years of age or older, comprising 12.6 percent of the population of the Commonwealth. One in four Kentucky households contained one or more persons 65 or older and over 14 percent of Kentucky's households contained two or more persons 65 or older.[2]

Several distinctive demographic processes underlie changes in Kentucky's elderly population. First, there is the impact of previous *fertility levels*. This process is demonstrated by the rapid growth in size of the elderly population between 1930 and 1940. During this decade the elderly population increased by over 33 percent—an increase that has not been attained in any decade since that time. Such growth is a direct result of dramatic improvements in health and economies during the post-Civil War reconstruction era, which led to high fertility during the 1870s. Another example is the 21.5 percent increase in the size of the elderly population between 1970 and 1980, caused by a similar increase in fertility just after World War I.

A second process involves the *migration of a younger labor force*. During the 1960s the Commonwealth's elderly population growth slowed to about 15.4 percent over the decade. This slowing coincided, however, with a dramatic increase in the share of the total population defined as elderly, which grew from 9.6 percent in 1960 to just over 12 percent by 1970. These comparative changes were a consequence of Kentucky's depressed coal economy during the 1960s, a decade marked by heavy out-migration of the labor force in pursuit of employment in other states and an aging-in-place of the older retired population. An upswing in economic conditions during the 1970s, plus a significant number of Baby Boomers entering the high mobility years of young adulthood, resulted in an influx of labor force migrants to the state, which caused a decline in the percent 65 and over, even though the elderly population was growing quite rapidly.

A third process—*migration of the elderly*—is evident in selected counties throughout the state. Areas such as Land Between the Lakes and, in more recent decades, Lake Cumberland have served as attractive retirement destinations for elderly residents from Kentucky and from several nearby states.[3] Migration of the elderly does not act in isolation but is associated with previous fertility and labor force migration.

It is with this context of multiple interacting demographic processes that we must interpret projections of future changes in Kentucky's elderly population. A period of high fertility following World War II generated the Baby Boom population, the first members of which will be reaching age 65 in 2010 (Table 2.1). The outcome will be a 31.4 percent increase in the 65 and over population between 1990 and 2010.[4] Additional increase between 2010 and 2020 will reflect the influence of the main body of the baby boom birth cohort which will be reaching 65 during this decade. Thus, in the single decade between 2010 and 2020 the population 65 and over is projected to increase by an additional 29.6 percent (high growth series projection).

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[2] Rowles, G., Gallaher, C.., Watkins, J., Ilvento, T., and Danner, D. (1996). *Kentucky atlas of the elderly* (Occasional Publication Number 4). Lexington, KY: University of Kentucky, Sanders-Brown Center on Aging.

[3] Rowles, G., Watkins, J. (1993). Elderly migration and development in small communities. *Growth and Change, 24*, 509-538.

TABLE 2.1
Projected Growth in Kentucky's Elderly Population, 1990-2020
(numbers in thousands)

	1990		2000		2010		2020	
	#	%	#	%	#	%	#	%
High Growth Series								
Persons 65+	465	12.6	538	13.3	610	14.2	791	17.5
Persons 75+	197	5.4	225	6.3	283	6.6	320	7.1
Persons 85+	45	1.2	67	1.7	86	2.0	92	2.0
Moderate Growth Series								
Persons 65+	465	12.6	494	12.9	525	13.5	656	14.5
Persons 75+	197	5.4	230	6.0	234	6.0	252	6.4
Persons 85+	45	1.2	59	1.5	67	1.7	66	1.7

Source: Kentucky State Data Center (10/96)

In addition to significant increase in the size of the general elderly population there is likely to be a continuation of change in the age composition of the elderly population, a trend that has become apparent in recent decades. With dramatic increase in life expectancy at birth (almost 30 years gained in this century—from 47.3 in 1900 to 75.5 in 1993), persons 75 and over have become an increasingly evident component of the elderly population (see Table 2.1). Indeed, the population 85 and over is the fastest growing segment of the population. Projections for Kentucky indicate that this age group will expand from 45,718 in 1990 (1.2 percent of the population) to 86,692 in 2010 (1.7 percent of the population), an increase of 89.6 percent over the two decade period.[5] In 1990, 9.8 percent of Kentucky's elderly population was 85 or older. By 2010 this will increase to 14.2 percent.

Growth among Kentucky's "old old" population (75 years and older) is not expected to progress uniformly across the state, and patterns of anticipated change are in some cases quite surprising. Three area development districts that have experienced the highest contemporary retirement in-migration, for example, include Purchase, Pennyrile, and Lake Cumberland, yet growth in the 75 and over populations of these ADDs is expected to slow by 2010 (Table 2.2). Similar magnitudes of slowing growth are also expected in Barren River and Kentuckiana. Conversely, dramatic acceleration of growth can be anticipated in the Appalachian ADDs of Big Sandy and FIVCO, and in Northern Kentucky.

Uncertainty in future migration trends will certainly alter current projections of our elderly population, and the relatively small size of the older elderly population will potentially cause forecasts of this segment to experience the greatest deviation from expected levels. Nevertheless, the statistics presented gain significance in that, regardless of the growth scenario used in the projections, there is no doubt that marked increases will occur in the 75 and over population size. These individuals, and especially those age 85 and over, are the most frail, the most dependent, and the most in need of services. The aging of Kentucky's elderly population is therefore likely to create major concerns with respect to service provision and caregiving strategies. Such concerns will be amplified by the recognition that some areas in the state where the pace of growth will be high may be hardest pressed to provide assistance for their elders.

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[4] Price, M., Sawyer, T. and Scobie, M. (1995). *How many Kentuckians: Population forecasts 1990-2020.* University of Louisville: Kentucky State Data Center.

[5] Kentucky State Data Center.

TABLE 2.2
Population 75 and Over by Development District

	Number (thousands)			Percent Change	
ADD	**1970**	**1990**	**2010**	**1970-90**	**1990-2010**
Barren River	8.5	13.4	17.4	57.6	29.9
Big Sandy	4.9	7.1	11.9	44.9	67.6
Bluegrass	17.8	28.4	44.2	59.6	55.6
Buffalo Trace	2.7	3.4	4.1	25.9	20.6
Cumberland Valley	7.6	11.8	16.6	55.3	40.7
FIVCO	4.9	7.2	11.6	46.9	61.1
Gateway	2.4	3.5	5.2	45.8	48.6
Green River	8.4	11.5	16.3	36.9	41.7
Kentuckiana	26.1	42.1	57.9	61.3	37.5
Kentucky River	4.2	5.9	8.2	40.5	39.0
Lake Cumberland	6.7	10.9	16.2	62.7	48.6
Lincoln Trail	6.2	9.7	15.5	56.5	59.8
Northern Kentucky	12.0	15.9	25.8	32.5	62.3
Pennyrile	9.0	12.8	15.5	42.2	21.1
Purchase	9.0	14.0	16.8	55.6	20.0
Kentucky (Total)	**130.4**	**197.7**	**283.1**	**51.6**	**43.2**

Source: How Many Kentuckians, 1995. (High growth Series), Kentucky State data Center, 5/96

Current Status of Kentucky's Elderly Population: Characteristics and Life Circumstances

Age alone is not an adequate indicator of health, well being, or dependency. Indeed the heightened attention during the 1970s given to the conditions and characteristics of the elderly did much to rectify the misleading stereotypes of growing old. How, then, can we more accurately describe our Commonwealth's elderly population? What are their current life circumstances? How have these characteristics and circumstances changed during the past decade? And what changes can we anticipate in the future as this population increases in size? In this section we present a brief profile of the current status of Kentucky's elderly population, employing several key indicators. (A more detailed profile is available in the recently published *Kentucky Atlas of the Elderly.* Unless otherwise indicated, all figures pertain to persons 65 or over.) The majority of Kentucky's elders are female (60.4 percent, almost identical to the national figure of 59.8 percent). Most elderly Kentuckians are white (94.0 percent in comparison with a national figure of 89.3 percent). A very high proportion of Kentucky's elders (44.5 percent) live in rural areas (defined as communities of 2,500 persons or less); this is almost twice the national percentage of 24.6 percent. A high proportion of Kentucky's elders live alone (31.0 percent in comparison with a national figure of 28.8 percent). Living alone is even more prevalent among Kentuckians 75 and over (38.3 percent). This is consistent with national trends that show that propensity to live alone has increased over the past three decades and that propensity to live alone also increases with age.[6]

Turning to objective indicators of well-being, it is apparent that, in comparison with national statistics, Kentucky's elders are subject to a litany of disadvantage. Many of Kentucky's elders have limited education; 44.6 percent have less than a 9th-grade education in comparison with a national figure of 25.9 percent. Many continue to live on low incomes. In 1989, more than one in five Kentucky elders (20.6 percent) lived on an income below the poverty level, in comparison with a national figure of 12.8 percent. For those Kentuckians 75 and over this figure rises to one in four (25.3 percent). In comparison with national figures, Kentucky's elders are also more likely to be without a telephone (5.3 percent versus 2.6 percent), to live in housing lacking complete plumbing (3.1 percent versus .98 percent) and to be without access to a vehicle (26.1 percent versus 22.3 percent). Compounding the effects of these objective disadvantages, Kentucky's elders are far more likely to report mobility and/or self care limitations; 37.2 percent of Kentuckians 75 or over report such limitations, in comparison with a national figure of 30.5 percent.

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[6] Kasper, J.D. (1988). *Aging alone: Profiles and projections.* New York: The Commonwealth Fund Commission on Elderly People Living Alone.

Individual indices of disadvantage are, by themselves, distressing. However, their effects are magnified by the situation of multiple jeopardy in which many elderly Kentuckians find themselves. Far too many of Kentucky's elders live under circumstances where they are alone, and survive on marginal incomes in inferior housing without access to a vehicle and with no telephone.

Regional Variation

As was the case with patterns of elderly population growth (presented above), a state-level perspective paints a very generalized picture. Aggregate statistics obscure major variations among substate areas in terms of population characteristics and indices of life circumstances—variations between an optimistic extreme, with counties that are far better off than the national figure, and those areas where conditions are truly distressing. This variation is revealed in Table 2.3, which documents county extremes on a variety of indicators and provides a tally of the number of counties falling both below and above the national figure for each index. A clear pattern of regional disparity emerges when the indicators are considered in concert. Major contrasts are apparent between rural and urban areas, for example, with rural areas revealing considerable disadvantage on many indicators. In addition, there continues to be a striking contrast between eastern Kentucky (particularly the western fringe of the Appalachian coalfield) and the remainder of the state. The persistence of disadvantage in this region is revealed by clusters of counties including Breathitt, Clay, Cumberland, Jackson, Knott, Lee, Leslie, Magoffin, Menifee, Monroe, Morgan, Owsley, Perry, Wayne, and Wolfe, which record distressing figures on a variety of indices. Knott (2.1 percent) and Owsley (3.7 percent) have the lowest levels of employment among the elderly. Jackson (80.1 percent) and Leslie (78.3 percent) have the highest percentage of elderly residents who have completed less than nine years of school. Monroe (44.8 percent) and Wayne (43.8 percent) have the highest levels of poverty among the elderly in the state. Wolfe (46.2 percent) and Morgan (44.2 percent) have the highest percentages of elderly householders incurring housing costs greater than 25 percent of their income.

TABLE 2.3
Comparative Characteristics of Kentucky's Elderly, 1990

Index	United States	State	# Counties Below US	Bottom 3 Counties	# Counties Above US	Top 3 Counties
percent 65+	12.54	12.67	43	Oldham (6.75) Bullitt (6.85) Meade (6.86)	77	Trigg(19.39) Fulton (20.42) Hickman (20.86)
percent 85+	1.21	1.20	55	Bullitt (0.34) Meade (0.52) Oldham (0.53)	65	Larue (2.29) Webster (2.45) Hickman (3.27)
percent 65+ African American	8.04	5.79	107	16 counties with no African Americans	13	Fayette (12.51) Jefferson (12.60) Christian (18.90)
percent 65+ Rural Residence	24.58	44.51	8	Jefferson (2.11) Fayette (2.85) Kenton (5.92)	112	45 counties are 100% Rural
%65+ Living alone	28.81	30.96	29	Breathitt (23.70) Magoffin (23.85) Bullitt (24.55)	91	Logan (35.99) Carlisle (36.30) Fulton (39.37)
%65+ Institutionalized	5.23	5.34	60	5 counties with no institutionalized person	60	Lyon (11.67) Hickman (12.83) Magoffin (12.87)
%65+ Less Than 9th Grade Education	25.93	44.60	1	Fayette (25.28) Jefferson (27.51) Franklin (29.09)	119	Butler (75.63) Leslie (78.27) Jackson (80.10)
%65+ Employed	12.16	9.80	96	Knott (2.08) Owsley (3.72) Letcher (4.15)	24	Bourbon (15.87) Trimble (16.11) Green (16.80)
%65+ Below Poverty	12.79	20.61	4	Oldham (8.49) Boone (10.95) Kenton (11.76)	116	Jackson (43.25) Wayne (43.76) Monroe (44.84)
%75+ Below Poverty	16.54	25.26	4	Campbell (14.52) Kenton (14.66) Jefferson (14.90)	116	Monroe (51.38) Jackson (51.48) Russell (56.21)
%75+ With Mobility and/or Self-Care Limitation	30.54	37.17	12	Lyon (21.64) Marshall (25.93) Shelby (27.72)	108	Elliott (51.64) Pike (52.63) Lawrence (53.46)
65+ Householder With No Telephone	2.55	5.29	11	Boone (1.16) Oldham (1.28) Ballard (1.36)	109	Clay (18.18) Clinton (18.24) Breathitt (18.68)
%65+ Householder Lacking Complete Plumbing	0.98	3.13	14	Union (0.13) Fayette (0.18) Boone (0.25)	106	Breathitt (14.81) Elliott (16.64) Robertson (17.28)
%65+ Householder With no Vehicle Available	22.32	26.09	35	Oldham (11.94) Bulliet (13.61) Marshall (14.73)	85	Clay (40.12) Magoffin (41.13) Perry (42.47)

Source: Kentucky Atlas of the Elderly (1996)

Temporal Trends

To what extent do the life circumstances of Kentucky's elders as described represent patterns that have remained consistent over time? As we begin to look to the future, are there signs of hope that the disadvantage of our elders in comparison with those elsewhere in the nation is lessening? The answers to these questions are mixed. First, the good news. In common with national trends, the educational level of Kentucky's elders has improved with each cohort. Improvement is also apparent since the time of the 1980 census in a number of indicators such as telephone ownership and access to transportation. Poverty levels are also dropping for some groups of elders, particularly males. However, in sharp contrast to these signs of hope are data revealing that for certain subgroups, particularly elderly women and especially the "old old," the situation continues to deteriorate and the gap between the most well-off and the least well off continues to widen.[7] Poverty among elderly women, for example, has increased during the 1980s despite the fall in general elderly poverty, and the increase is especially noteworthy among women age 75 and over. The percentage of persons age 75 and over living alone has moved upward almost 5.5 percentage points between 1980 and 1990, and this phenomenon also tends to be acutely associated with women.

Looking to the Future: Emerging Trends and Recurrent Concerns

At this point it is useful to begin considering some of the implications of the demographic projections presented earlier in this chapter with respect to the degree to which they are likely to result in, or be paralleled by, changes that will lead to improvement in the life circumstances of Kentucky's elders. What will the next century, an era which some years ago the writer and scientist Isaac Asimov characterized as "the approaching age of age," hold for Kentucky's elders? Allowing ourselves the luxury of speculation, it is helpful to consider some of the ways in which the experience of growing old is likely to change in the approaching age of age.

First, with increasing longevity, the *pathways of aging are likely to become ever more diverse* as the limits of physiological capability expand and the health status of the elderly continues to improve. There is likely to be an increased range between the most and the least capable during each phase of old age. Second, ever-increasing diversity within the elderly population will lead to entirely *new definitions of what we mean by aging*. That this process of redefinition and differentiation is already well underway is manifest in the introduction to our lexicon in recent decades of distinctions between the "young-old" (65-74), "old-old" (75+), "oldest-old" (85+) and even the "pre-old" (55-64). Third, old age will come to be associated with *entirely new activities*: starting a business, embarking on a second career, volunteerism, giving expression to talents that remained latent during a traditional working career, such as sculpture, painting, or even politics. Fourth, old age will come to be associated with *new roles*, some of which, such as becoming a caregiver for aging peers or assuming a greater role in the education of our youth, may become normative. As we evolve a new identity for aging, elders are likely to assume roles we have not even imagined. Indeed, we anticipate witnessing the emergence of an entirely new culture of aging and the aged; a culture forged to a large extent by the elderly themselves as they assume new roles in a postmodern society. Fifth, there will be continuing *proliferation of innovative models of care* for our oldest old, and for those who are less healthy and capable, as we harness the power of technology to design living environments in which even the most frail can continue to live with independence and dignity. It is quite conceivable that sophisticated robotics and benign monitoring systems will become key elements in the lives of the frail elderly. Finally, there are likely to be momentous social *changes in the relationship of the elderly to the remainder of society*. Not all of these changes will necessarily be positive. There is a danger that the separation and alienation of generations will be accentuated as increasing numbers of elders elect to reside in age-segregated environments–the Sun Cities, Leisure Worlds, and a plethora of smaller retirement communities that are springing up all over the nation, including in Kentucky. In Lexington alone there are three such communities: Richmond Place, Lafayette Place, and Mayfair Village. Alternatively, it is conceivable that our society will evolve in a manner that threatens the very integrity of the aging experience. As the debate over the intergenerational distribution and allocation of resources becomes more acrimonious, as we anguish over the use of life-extending technologies, as we consider the merits of assisted suicide, it is possible that there will emerge an entirely new and mean-spirited ethos of growing old. Will we evolve a new society in which, to paraphrase the now infamous words of former Colorado Governor Richard Lamb, the elderly will be encouraged, perhaps even obliged to get out of the way? In sum, in the years ahead there are likely to be many changes in the pathways by which we grow old. These pathways will be navigated by elderly of increasingly diverse characteristics and circumstances, and are likely to lead to an increasing diversity of accumulated personal life experience.

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[7] Rowles, G., Johansson, H. (1993). Persistent elderly poverty in rural Appalachia. *Journal of Applied Gerontology 12*, 349-367.

As we contemplate this diversity, it is important to remember the human face of growing old. We strongly believe that success in facing the diversity of the new aging will be conditioned by the degree to which we are able to satisfactorily resolve many of the dilemmas that confront us as we deal with those of our elders who are frail and vulnerable. We are thinking of more than 45,000 Kentuckians over 85 years of age who are alive today, and more than 86,000 who are projected to be living in the Commonwealth less than 15 years from now. We are thinking of people like Leroy and Cicely who currently survive despite less-than-ideal circumstances. While many of these people remain active and engaged in life, a large number do not. As we have documented, far too many Kentuckians still live in poverty, in inferior housing, with limited access to transportation, and in geographical isolation from much-needed services. Thus, it is especially important to consider what the trends that have been speculated upon will mean for the future of Kentucky's elders. Perhaps, even more important, what will we do as Kentuckians to ensure that the changes which are most assuredly coming are harnessed as an opportunity to improve the life circumstances of those of our elders, particularly in certain parts of the state, who are growing old under conditions of severe hardship.

Charting Directions in Living With Age

Short of Draconian intervention through euthanasia, we cannot change the basic demographics of aging (for those who will be old have already been born). However, we can change our responses to them. We can create a Kentucky in which no elder remains poor, lives in inferior housing or is denied access to services he or she needs. We conclude this chapter by suggesting several broad directions in which we might progress in Kentucky, with respect to how we might live with an aging population and how we as individuals might live with our own aging.

Assisted living and continuum of care alternatives. The aging process is not clearly marked by discrete and sudden changes. We evolve over time with regard to such factors as physical and emotional strength, and sensory acuity. Because of these gradual and ongoing transitions, we have ever-changing needs from our immediate living environment. Unfortunately, too few homes, either family or institutional, allow the flexibility to meet the changing needs of the elderly. Consequently, recognizing the trend toward ever-increasing diversity in the elderly population, it will be important to progress toward a situation where in every part of the Commonwealth there exist a wide array of living and support options for the elderly (assisted living options, family care homes, a variety of home care options, etc.). Each of these options should be integrated within a comprehensive system of linked residential options that afford the opportunity to move freely from less to more supportive options (and back again) as individual circumstances change. Currently, there exist a plethora of innovative residential options that might become part of such a continuum but, especially in many rural parts of the state, real choices are limited for our elders because many of these options are unavailable in individual localities.[8]

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[8] Golant, S. (1992). *Housing America's elderly: Many possibilities, few choices.* Newbury Park, CA: Sage.

Innovative technologies and design solutions. Given that the preference of the elderly to age in place is likely to continue into the new century, a major priority should be placed on embracing innovative technologies and design solutions that make it possible for elders to remain at home and able to live independently for as long as possible. Innovations in robotics (perhaps facilitated by expansion of the mission of the Center for Robotics at the University of Kentucky), advances in interior design, sophisticated landscape architecture, and even advances in the use of pharmaceuticals, may be employed to sustain independent living.

Overcoming barriers of distance. A major constraint on improving the life circumstances of elders in Kentucky is the barrier of distance and the remoteness of many elders from services that is a consequence of the rural character of much of the state. By embracing new forms of communication and communication technology, including distance learning, telemedicine, and other types of non-place-based services, it will be possible to effectively collapse space and enrich the lives of elders in even the most remote areas of the Commonwealth. Initiatives are already underway in these areas through the Center for Rural Health at the University of Kentucky. We can anticipate that continued expansion of such telecommunication options will become a major feature of service restructuring during the next century.

Expansion of selected services. While the introduction of new technologies will clearly become a major feature of service and care for the frail elderly, it is also important to recognize the role of more traditional programs. There is a need for the expansion of rural transportation services, financial planning services, and home care programs. In addition, we can anticipate the further growth of new services and programs which in recent years have become important features of the social service landscape. Such programs include community-based social support and respite care programs. We can also anticipate continuing expansion of adult day care (a service in which the state has played a pioneering role over the past decade) and growth in the importance of eldercare programs providing information and assistance to family members caring for a frail elderly relative. These programs might even involve the creation of care service banks through which individuals can gain credit for providing care for an elder in their neighborhood that can be used in a different part of the state to purchase similar care for their own relative living in that part of the state.

Seeking and encouraging new roles. Finally, perhaps the most important direction we can take is to invest in the support of elders as they create new roles for themselves as with increasing numbers they begin to evolve a very different culture of aging than currently exists. Obviously, we cannot predict the directions that this evolutionary process will take–whether it will involve greater emphasis on volunteerism, the assumption of enhanced family and community caregiving roles, the evolution of a leisure lifestyle separated from the remainder of society, or the assumption of politically powerful roles in mainstream society. What we do know is that the demographics of an increasingly aged Commonwealth will inevitably lead to emergence of new roles for elders. Moreover, building on the power of numbers, it is likely that future generations of elders will be less tolerant of the life-circumstance inequities we have described.

Hopefully, the outcome of reinforcing these and other strategies will be elevation of the life circumstances of all of Kentucky's elders and a reduction of the disparity between those who are best and worst off. While change will be inevitable, the direction of this change is not predetermined. Rather it will depend on the will we have to create the kind of environment in which all Kentuckians can grow older with dignity, independence, and an appreciation of the interdependence that is necessary to maximize quality of their lives. In considering the implications of change for quality of life, it is important to emphasize that the indicators of life circumstance employed throughout this chapter do not necessarily translate directly into "quality of life" or imply any judgments on our part with respect to lifestyle. Quality of life involves far more than the measures we have discussed. For most elders it entails immersion within a supportive milieu of family, friends, and community, and a socio-cultural context that provides reinforcement for a preferred lifestyle, a sense of personal identity, and an historical involvement with place. Viewed from this perspective, it is not surprising that the research literature amply illustrates that objective disadvantage is not necessarily associated with low levels of "subjective" well-being or an inferior lifestyle among the elderly.[9] While we acknowledge that objective circumstances do not necessarily correspond with subjective well-being, adopting a relative deprivation perspective, we see no reason for this relationship to serve as a justification for inaction.

Accepting Responsibility

What kind of place are we creating for our elders? What kind of setting do we want to create for a generation that will have quite different backgrounds from the current generation? In a very real sense it is important to consider the ways in which the next generation of elders will be reformulating the experience of growing old in Kentucky. Growing old in Kentucky will be what we choose to make it. We have two choices. One is to perpetuate through inaction the status quo. The outcome of this strategy will be reinforcement of the fragmentation of Kentucky's elderly population into an array of contrasting sub-populations that move progressively farther apart from each other in the Balkanization of the aging experience--ranging from a group of relatively affluent retiree immigrants whom we actively recruit and attract to selected amenity regions of the state, to a group of disadvantaged elders in some areas of the state whose status continues to decline as we make only token efforts to alleviate the abysmal circumstances under which they eke out an existence. While it is important to celebrate diversity, such diversity should be based on divergent chosen pathways rather than the constraints of disparate life circumstances imposed by an uncaring community. It is important to begin to accept responsibility for our own future so that by the time we reach retirement the dire circumstances of the Leroys and Cicelys of our Commonwealth will be but a memory.

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[9] Lee, G., Lassey, M. (1980). Rural-urban differences among the elderly: Economic, social and subjective factors. *Journal of Social Issues, 36*, 62-74.

Families and Children: The Common Wealth of Kentucky

Kentucky families are becoming older, forming at a slower rate than are nonfamily households, and becoming more diverse than ever before. The preservation of Kentucky families depends on adequate education of adult members, access to jobs that provide livable wages and benefits, and changes in family formation. When families are unsuccessful in socializing, nurturing, regulating, and providing for their members, the cost is borne by everyone. Thus, the Commonwealth has an interest in building and maintaining strong families who function successfully.

By Stephan M. Wilson
University of Kentucky

Kentucky families, like families throughout the nation, are changing.[1] Over the last two centuries, they have become smaller and more diverse, and, on average, they move more often, have more family members living into old age, enjoy better health, and have more education and wealth. Today, family life is also informed by greater equality across gender, race, and income than was true in the past. In spite of the many changes and improvements in the lives of a majority of Kentucky families, some negative aspects of earlier trends continue, and new challenges to the least advantaged of Kentucky families and children loom on the horizon.

Early Kentucky families, such as the family of Daniel and Rebecca Boone, experienced long absences from each other in their marriages and isolation from their extended families, but they had a definite notion of the meaning and composition of family. As new generations emerged, social and economic conditions brought about changes in this traditional family unit of two parents with children. Small nuclear families that included extended networks of kin with strong ties to the land and to each other evolved, characterizations that describe many rural Kentucky families even at the close of the 20th century. Unlike the gradual changes experienced by early Kentucky families, contemporary families have experienced relatively rapid and sweeping changes in family formation, roles within families, and the compositions of households, in response to social and economic conditions. In spite of the continuing importance of family, departures from traditional concepts mean that law, language, social customs, and lifestyles often do not intersect with a common understanding of "family."

For example, the percent of children in Kentucky who live with two parents has declined from 85 percent (1960) to 73 percent (1990).[2] Further, Kentucky now has fewer married couples with children under age 18 at home than married couples without children living with them. In fact, the number of households with relatives residing together (family) has declined from 88 percent (1960) to 74 percent (1990). Today, nonfamily households (i.e., single or unrelated householders living together) are the fastest growing household type in Kentucky, followed by single-parent households. An adult Kentuckian is more likely to live in a "nonfamily" household than ever before.[3]

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[1] Ilvento, T., Dyk, P., Garkovich, L., Hansen, G., & Moore, M. B. (1993). Kentucky families in transition. *A special report from the University of Kentucky Population Laboratory*. Lexington, KY: Author, 1.

[2] Ilvento, et al.

[3] Ilvento, et al.

Trends Influencing Family Formation and Function

As with the nation as a whole, the formation and the function of Kentucky families is being influenced by economic and social trends. For example, fewer Kentuckians marry today than in past decades. Nationally, both marriage rates and divorce rates are declining. When and if marriage does occur, it occurs at older ages. By the 1990s, the age at first marriage had increased to 24 years for women and 26 years for men, about three years later. than in the 1960s, a feature reminiscent of decades prior to the 1940s. Changing economics, the increased participation of women in the labor force, and the feminization of higher education are major influences on the delay of first marriages. In turn, these factors influence the choice to postpone and to have fewer children.

While Kentucky families share national trends, some features are unique. For example, the number of new households has been growing at a faster rate than the addition of new families to the population. Since 1960, Kentucky's population has increased by 21 percent while household growth has increased by 62 percent. The average household size has decreased by nearly one person, from 3.5 (1960) to 2.6 (1990). During the same period, nonfamily households increased from 12 percent to 26 percent of all households. A smaller, but steady increase in the proportion of households headed by single parents has also occurred. Trends unique to Kentucky compel the design of family policies and programs that are, in many cases, different from those of other states with different demographics.

As the Commonwealth moves into its third century, the variety of family structures is becoming more diverse and less familiar, and a wider range of family types is becoming more common. As a result of social and economic changes and increased diversity, families are being pressured to fulfill traditional family functions *and* adapt to new demands. Empowering families to meet both these demanding new challenges should become a primary societal concern in the years ahead.

Kentucky Families and Children

Increasingly, society is being called to redefine, support, and complement the functions of family. A wide array of pressing, family relevant issues, including child and elder care, health care, opportunities for postsecondary education, adequate housing, and youth and adult unemployment and underemployment, are gradually rising to the top of the political agenda. In addition, society is being called upon to provide family life education, prevention and treatment for domestic violence, prevention and treatment for child neglect and abuse, individual and relational counseling, and training for transition to independent living. Society also must protect those who do not live in traditional family households. This list of responsibilities is not exhaustive, but we cannot afford to neglect these and other basic concerns.

At the turn of the century, the most pressing concern in Kentucky is arguably poverty, a condition which exacerbates most of the costly societal problems we now confront. Indeed, poverty is not solely the burden of impoverished families. Instead, it influences all Kentuckians who pay taxes and share community assets, such as education and health programs. Our collective fate is inextricably bound to the well-being of individuals and families, and their abilities and willingness to contribute to the common wealth.

Today, our youngest families, particularly those with young children, are the most vulnerable and the most likely to be poor. Data from the Children's Defense Fund reveal that the purchasing power of families with young children, headed by someone under the age of 30, fell 32 percent between 1973 and 1990.[4] Insufficient economic resources are related to family attempts to carry out protective and nurturing functions. It is, therefore, critical that policies empower families of

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[4] Children's Defense Fund. (1992). *The state of America's children yearbook 1992*. Washington, DC: Author.

all ages to attain a sufficiently high standard of living and competence to successfully nurture and educate their children.

The effect of poverty for the 27 percent of Kentucky's children who live below the poverty line goes far beyond merely limiting their choices of food, clothing, and shelter.[5] The Kentucky KIDS COUNT Consortium (1995) estimates that about half of the children in Kentucky are members of families who live below or barely above the poverty line, and thus are unable to provide a minimal standard of living. It is not just single-parent families or families on welfare who are suffering. Many families are finding it increasingly difficult to avoid poverty or economic marginality regardless of family structure. Across America, more than 5.6 million children—over a third of all poor children—live in working poor families.[6] Further, between 1989 and 1994, a period of overall economic strength in both the national and state economy, the number of children in working poor families increased by 30 percent.

Our understanding of poverty is obviously critical to our ability to remedy it, but assumptions about the causes of poverty often are not grounded in fact. Most children born outside of marriage, for example, are born to women over age 25. Although family poverty is related to gender issues and to single-parent households, one half of poor children live in married, two-parent households where at least one parent (usually the father) works year round.[7] Thus, family poverty can neither be explained nor eliminated by changes in family structure alone. Creating effective policy to train and employ welfare families, for example, is currently mandated in each state by the federal government. But unless policies work to change economic circumstances for the working poor, moving more Kentucky families into that category is likely to be counterproductive. Rather than focus on perceived family anomalies, we must better prepare citizens for more self-sufficient lives and improve employment opportunities.

Rather than focus on perceived family anomalies, we must better prepare citizens and improve employment opportunities.

What we do assuredly know is that the economic circumstances of families profoundly affect their children's lives. When children from economically disadvantaged homes enter school, they are more likely to lack basic academic skills and to be less ready to learn than their peers from more affluent families. These educational liabilities are likely to remain with children throughout their school careers. Inadequate access to resources and appropriate stimulation for young children also detracts from their physical and emotional health. It lowers future levels of educational and occupational attainment, and undercuts preparation for adulthood, including employment, parenthood, and citizenship. Lower performance in these areas leads to higher public expenditures for family and individual support, remedial and correctional services, erosion of tax bases, and becomes a threat to our "economic wealth."

Early intervention for economically disadvantaged children is a critical public and private investment that can effectively break the cycle of poverty and improve individual and societal outcomes. Children who do well in school are more likely to become economically self-sufficient adults and to be better prepared to make other contributions to family and society. As a follow-up to recent nationally recognized educational initiatives in public school, Kentucky is in a unique position to mandate policy and programs for all preschoolers, regardless of the economic situation of parents, and to provide educational, health and remedial assistance that will help ensure their readiness. If all Kentucky families were able to send their children to school ready to learn, the Commonwealth would enjoy substantial direct and indirect benefits. Fewer families and children would live in poverty and, over the long term, the enormous cost of mitigating the outcomes of poverty would be greatly diminished.

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[5] Kentucky KIDS COUNT Consortium. (1996). *County data book, 1996*. Louisville, KY: Kentucky Youth Advocates.

[6] Kentucky KIDS COUNT Consortium. (1996).

[7] Kentucky KIDS COUNT Consortium. (1996).

Factors Related to Family Poverty

Beyond the overrepresentation of particular gender, race, and location of family poverty, several factors help predict which families are most likely to experience poverty. For example, the persistence of teen single parenthood, particularly among young African-Americans, is a counterpoint to the increase in age at first marriage among the general population and the decrease in the number of children born to married couples in their 20s and 30s. The highest rates of poverty occur among those with the highest rates of teen and unmarried parenthood.

A strong and persistent relationship also exists between single parenthood and family poverty, whether the parent union dissolves before or after children are born and whether the parents were ever married or are divorced. Single parents and their children are more likely to experience poverty and subsequent reliance on welfare. Although many single-parent families are strong, a disproportionate percentage experience serious problems compared to two-parent families. In addition to its relationship to child poverty, single parenting is associated with lower educational attainment, poorer mental and physical health, higher rates of teen pregnancy, lower rates of high school completion, and other problems that compromise child, adolescent and family well-being. Future policy must address the rate of single parenthood, as well support better outcomes for the substantial number of single parents and their children.

> *Although many single-parent families are strong, a disproportionate percentage experience serious problems compared to two-parent families.*

The age at first parenthood is a strong predictor of economic well-being for families with children. Young parents, particularly unwed mothers, are likely to have insufficient education and experience to make a successful transition to independent adult life, that does not require government transfer payments and assistance from their parents and other family members. The costs of young single parenthood are borne not only by the young parents (mothers in particular), but by their children, their parents, and all taxpaying citizens. In response, policies and programs to prevent adolescent pregnancy must be targeted at both sexes and families of origin, and involve communities, as well as schools. At present, most Kentucky programs involve adolescent girls, sometimes their children, and schools. More community involvement, better preventive education for males and females, more access and new policy directions, more accountability and eradication of child poverty (i.e., for mother and baby) are challenges for the end of this century and into the next.

Many also point to divorce rates as a contributing factor in rising inequalities. The divorce rate in Kentucky is considerably above the U.S. average, while child support collection is below the national average. Today, as has been true since 1960, custody of about 9 out of 10 children of divorce is awarded to the mother.[8] From an economic standpoint, this automatically places children at a disadvantage. They are further disadvantaged in Kentucky, which ranks 40th in the nation in regard to economic gender equality indicators. According to the Center for Business and Economic Research at the University of Kentucky, the median income for women with 15 years or more of employment is only 57.1 percent of men with comparable job tenure.

African-American Kentuckians face disproportionate economic disadvantages and limited access to many kinds of opportunities, as well as prejudice. Such hardships sometimes overwhelm family resources and contribute heavily to family disruptions. In 1990, 35 percent of African-American children lived in married couple families, compared to 76 percent of other Kentucky children.[9] African-American children were twice as likely to be poor. Because higher proportions of African-American families have moved to and are concentrated in urban areas, policy and programs dedicated to improving well-being are of special concern to municipalities.

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[8] Weitzman, L.J. (1985). *The divorce revolution.* New York: Free Press.

[9] Ilvento, et al.

In rural areas, inclusiveness is key because smaller proportions of minorities may make their special needs less apparent to policymakers and public service personnel.

Kentucky's legal system also continues to struggle to resolve economic inequities between divorced parents. However, court-ordered collections of child support payments succeeded in only 14 percent of Kentucky cases.[10] The development of a less adversarial system that fosters the involvement of noncustodial parents in their children's lives could not only yield financial benefits for children, but social and emotional ones as well. At present, legal processes too often reward the aggressive self-interest of parents with little regard for the real and comprehensive needs of children. Policy is urgently needed to place trained family professionals in the roles of mediators before coercive and invasive court interventions take place. By contrast, judges, lawyers and clinicians often presume that divorcing families are already "broken" and effectively exacerbate negative outcomes in the lives of children.

Special Populations

Step Families. The United States has the highest remarriage rate in the world. It is estimated that more than 40 percent of all marriages in the United States today are remarriages for at least one of the spouses, and most of these remarriages involve children. This has produced an estimated 2.3 million step family households. Given the growing population of step families, it is increasingly important to clarify the legal status of step parents in Kentucky. Step families generally involve three or more parents who usually do not share consensus about parental rights, responsibilities, and privileges. As a consequence, the role of step parents remains ambiguous. Parental legal rights concerning their step children are very limited, yet society expects them to function as responsible and effective parents to their step children. It is urgent that services for step families be expanded and laws be made more sensitive to and supportive of this growing family form. However, it is also crucial that policies support and balance the rights of noncustodial parents to help them remain a meaningful part of their children's social and emotional lives, as well as in their roles as financially responsible contributors.

Older Adult Families. While some groups of Kentuckians aged 65 and older have experienced improvement in overall economic well-being, the lives of other elders are increasingly economically compromised. Because of limited lifelong job and economic opportunities, many older Kentuckians live their later years at or below the poverty level.[11] In an ironic twist, those who have been denied education and good jobs are further denied financial equity in their old age, largely because they had less opportunity in their lives. Poverty among the elderly has negative effects on health, residential independence, well-being, and general quality of life for both individuals and their families.

Women, minorities, and those residing in central cities or the most remote rural areas are more likely to experience poverty in their later years. According the 1990 U.S. Census, African-American elderly are more likely to live in poverty (35 percent) than are nonminority elderly (20 percent). Poverty in rural eastern Kentucky counties has risen dramatically, particularly for very old Appalachian women. In one in three rural counties in eastern Kentucky, more than 40 percent of women who are 75 years or older live in poverty. In five of these counties, very old women experienced poverty rates over 50 percent.[12]

Many poor elderly are unable to pay for the necessities of independent living, medical care, prescription medicine, or long-term care. Elders who have difficulty maintaining their independence often must rely on informal supports, mainly family, to provide assistance. There are, however, consequences to younger family members, particularly younger women, in terms of the physical, emotional, and economic costs of caretaking. Further, those elders with the highest risks for poverty are most often members of families who themselves have the fewest material resources. Although services can be targeted to urban elderly poor with relative efficiency, services to isolated rural, poor elders remain of great concern. The challenge for Kentucky is to relieve the poverty of the elderly in family sensitive ways and to provide more resources and a wide variety of innovative programs for all of the elderly. As the population ages and more individuals survive longer, poverty among the elderly will demand increasing attention to prevention and relief for at-risk elderly and their families.

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[10] Kentucky KIDS COUNT Consortium. (1992). *County data book, 1992*. Louisville, KY: Kentucky Youth Advocates.

[11] Report of the Rural Sociological Society Task Force on Persistent Rural Poverty. (1993). *Persistent poverty in America*. Urbana, IL: Author.

[12] Rowles, G., Johansson, H. (1993). Persistent elderly poverty in rural Appalachia. *Journal of Applied Gerontology, 12*, 349-367.

Rural and Urban Families. While rural and urban Kentucky families share common problems, they also face unique circumstances. For example, rural families are more likely to be married couple families with children (42.3 percent, compared to 34.6 percent of urban families) and are less likely to be single parent families (7.7 percent compared to 13.5 percent in urban areas). However, rural families are more likely to live in poverty and enjoy access to fewer and less adequate services, including education, physical and mental health systems, transportation and public assistance.

On the other hand, urban families often do not enjoy the informal services and social supports available to many rural families. Rural families tend to help each other across generations, partly because rural families are more likely to live near several households of extended family and lifelong friends and to have daily contact with them. Rural Kentuckians have a heritage of strong family bonds and residential constancy which promotes strong loyalty to a locale and to each other. Familism, in which the survival and well-being of family is placed above individual concerns, ensures that everyone will have greater access to pooled resources, including intra-family services, in times of need, but also demands greater obligations from each family member. Familism provides both an incentive and an obligation to remain tied to a place and a particular group of people, and discourages individuals from leaving their home area for potential individual gain. Residential constancy is most encouraged in geographic areas where economic opportunities are likely to be stagnant or diminishing.

Appalachian Families. Appalachian families are particularly known for familism, strong loyalties to religious and artistic orientations, and to family land. Over the last half century, many Kentucky mountain counties have experienced a massive exodus of residents in search of economic survival. Often these same counties do not have sufficiently strong or diversified economic development to support the families who stay. Appalachian families who remain often suffer economic hardships; however, families who leave suffer the consequences of being separated from the people and places they most value. Out-migrants often have higher levels of education and job skills than those who remain. Some have argued that Appalachian Kentucky is a kind of "third world within the United States"—furnishing cheap labor and raw materials for economic interests outside the region. In a situation similar to the "brain drain" faced by third world countries, Appalachian families and children will face increasing problems if the pool of human and material resources in their home communities continues to be depleted.[13]

Kentucky Families and Child Care

Gaps in adequate care for the children of working parents present a significant public policy challenge. In 1991, 67 percent of U.S. mothers with children under 18 and 53 percent of women with an infant younger than one year old were in the labor force,[14] creating an estimated overall demand for child care for 11.6 million children. Nationally, an estimated five million child care slots were available for children in licensed centers and regulated family day care homes in 1991. Thus, 6.6 million children were in unlicensed or in nonregulated care. And, even if child care is available to parents, it is not always affordable. In Kentucky, subsidy programs for child care services have been so limited that the Department of Social Services has been forced to stop adding names to the 10,000 children already on its child care waiting list.

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[13] Wilson, S.M. (1994). Rural and Appalachian youth and their families. In P.C. McKenry, S.M. Gavazzi (Eds.), *Vision 2010: Families & adolescents* (pp. 38-44). Minneapolis, MN: National Council on Family Relations.

[14] Children's Defense Fund. (1992). *The state of America's children yearbook 1992*. Washington, DC: Author.

Further, even if parents can find child care and can afford to pay for it, the quality of available child care is often an issue of concern. Child care fees in the South, including Kentucky, are the lowest in the United States, with the average fees for center, regulated family day care and nonregulated family day care being $1.29 per hour, $1.32 per hour, and $0.89 per hour respectively. These low fees index the low wages for child care providers and indicate the basis for the general lack of professionalization and career commitment among child care workers. The average annual salary for a preschool teacher nationally is approximately $11,500. Teachers with a college degree have opportunities for more lucrative employment, which contributes to the high turnover rate (about 40 percent per year) in child care settings. However, the well-being of infants and preschoolers is being advanced most in child care settings with the same professional teachers and well-trained child care workers. Quality programming is also related to group size and child/staff ratios, but Kentucky's current regulations do not meet recommended standards for either. Ironically, recent polling suggests that the Kentucky general public believes lower child/staff ratios should be set and subsidized by the state.[15]

The inadequacies of today's system are likely to worsen in the absence of concerted attention and expanded investment. About 60 percent of all Kentucky mothers of children younger than six are in the workforce, a trend expected to continue into the next century. More than 154,000 Kentucky children under the age of six already have mothers in the workforce. While the consequences of welfare reform are not yet known, it is likely to flood an already strained child care system with demands for affordable, available, and high quality care for our most vulnerable citizens that will permit mothers to work. Scholars and practitioners agree that young children require the best-educated caregivers and lowest ratio of staff to children because of their many developmental needs. If child care workers, professional staff, and adequate building environments are to be provided for the growing needs of Kentucky preschool children, funding initiatives, worker education, and the establishment of child care facilities must be undertaken immediately.

Promoting Prosperous Families

One mechanism for dealing with economic disadvantage is to empower those who are in poverty to break free. Empowerment occurs when opportunities are created for the display of competence, and families develop the ability to meet their own needs and aspirations in ways that promote control over their own family functioning. Fairly typically, families experiencing chronic poverty do not have control over their lives because of minimal levels of education, lack of adequate employment, fear of risk taking, and having too many children at relatively young ages. Empowerment of families, as a way to promote prosperity, may be best accomplished by making resources available for adequate education, job training and employment. In spite of the obvious costs of these efforts, failure to provide needed resources has a "pay-now-or-pay-later" consequence. Families in poverty are more likely to have children who have poor school performance, who experience chaos in many parts of their adult lives, increased risk for disrupted schooling and inadequate job attainment, early pregnancy, family instability, difficulties with the law, dependency on public assistance, and disappointing personal relationships.

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[15] Townley, K., Wilson, S.M. (1996). *Child care providers and the general public's attitude regarding government involvement in child care*. Unpublished poll. Lexington, KY: University of Kentucky Research Center for Families and Children.

If family prosperity, in all meanings of the word, is to occur, public programs and private efforts must inspire new visions of family empowerment and full participation in citizenship. Such efforts must furnish appropriate means for establishing stable family life, developing parenting skills, involvement in their own and their children's education, community participation, successful employment, and a sense of control and self-direction. Education and training of disadvantaged individuals and families are not enough to strengthen families or to improve the quality of life in Kentucky households. For many families, quality of life includes wanting and needing to remain in their current communities. Essential elements of creating prosperity in Kentucky families are the attraction or creation of value-added businesses that offer livable wages, the use of natural and human resources from the area (e.g., value added industry such as furniture manufacturing rather than exporting logs), and the creation, implementation, and wide dissemination of professional family life education programs, as well as family support services that make employment possible, such as elder care, child care, and family friendly work environments. Families prosper when they are given adequate access to appropriate resources, and are encouraged to meet their own needs in a competent and independent manner.

Although welfare reform may be an opportunity for the Commonwealth to set policy and funding goals which can empower families who now depend on public programs, a larger and more troubling need for adequate policy and funding is the plight of the working poor.

Examination of disadvantaged families in Kentucky leads to the conclusion that poverty underlies most problems, and that the root cause of most poverty is attributable to problems in economic and educational access, and family functioning. Given the facts reviewed in this chapter, it is unrealistic to think that taking away welfare, or forcing people to work at minimum wages will create prosperity for disadvantaged Kentucky families. Although welfare reform may be an opportunity for the Commonwealth to set policy and funding goals which can empower families who now depend on public programs, a larger and more troubling need for adequate policy and funding is the plight of the working poor.

The trends and emerging realities outlined in this chapter are likely to continue into the early decades of the next century. There is no "quick fix." Constructive, courageous, and informed, public policy decisions will be required to move disadvantaged families toward empowerment and self-sufficiency.

Future of Kentucky Families

In the coming decades the proportion of nontraditional family structures will continue to increase in Kentucky, and these different family forms will require specific kinds of public attention. The "traditional family" with an intact first marriage for both spouses, a working father and a stay-at-home mother, and several young children is rapidly becoming a phenomenon of the past. Today, only a very small minority of American households include such families. The changing profile of families requires that long-range strategies to assist Kentucky families first acknowledge and then plan public policy which accurately reflects who we are and who we are becoming.

It is also likely that the proportion of children in the population and the number of children per family will continue to decline, while the number of couples who choose to remain child-free will likely continue to increase. The number of households without children and without relatives is also likely to continue increasing. Among nonfamily households, many will continue to provide family-like functions for each other, without protection of benefits such as health insurance, death benefits, tax breaks, inheritance, and family leave. Policy planners must carefully consider how legal protection may contribute to further erosion of unique family prerogatives against how such protection may relieve the state from responsibilities for public assistance for health, education, housing, welfare, etc.

Family viability, the capacity of families to remain together and to be able to support themselves in place over time, must become a focus for policymakers. Such a measure is sensitive to education, availability of quality jobs, health, crime, marriage and divorce, migration, birth and mortality, cost of living, public assistance, and the proportion of nonmarried households. Given the rural and Appalachian ties to the land and to particular small communities that characterize so many Kentucky families, family viability is an important consideration for the creation of family and child supportive policies.

Areas of Need for Research

Although it is important to conduct targeted research that examines family issues such as domestic violence, transitions to self-sufficiency and special needs families, it is crucial that family research not be simply about "problems." It must also contribute to understanding family strengths, diversity, normative processes, and success. Policy must move beyond trying to address deficiencies. Prevention and intervention have their place, but family policy must be proactive and promote family well-being. Such policy requires thorough, honest, and well-balanced understanding of Kentucky families as they really are. Research is needed:

- To establish effective means of lifting and keeping people out of poverty
- On the efficacy and costs of programs and how these support goals such as family empowerment
- On the long-term costs of providing and of not providing family supports (i.e., to these families and to the state)
- About internal family processes, as well as the interface between families and society
- About the dynamics and means of family success

Such research can provide the basis for more successful programs for all families and children to promote individual and family dignity and ultimately to decrease human and fiscal costs.

Areas of Need for Public Policy

Given the intricate and often myriad influences on families and the multiple demands on diverse families, the formulation of family policy is complicated and difficult. However, many opportunities exist to promote healthy families and children by addressing well understood and well documented problems and possibilities. While additional research is needed, clear and compelling areas for public policy initiatives related to Kentucky families and children include:

- Prevention efforts for prenatal care, early childhood health, development, and enrichment for families with children who are at most risk
- More effective child support payment systems, as well as mechanisms to keep noncustodial parents socially and emotionally involved in the lives of their children
- Programs which decrease the likelihood of family homelessness
- Programs which decrease separation, divorce, or post divorce conflict
- Aggressive programs to discourage teens from becoming parents
- Programs for teens that include effective family life education, pregnancy prevention, educational advancement, and career development
- Programs for teen parents, including family life education, educational continuation, and career planning

- Family life education by qualified professionals, including premarital education and counseling, marriage enrichment, parent education, intergenerational family relations, sexuality education, marriage and family therapy, and divorce mediation
- Support services to ease transitions and increase marriage and family survival rates
- Welfare reforms that emphasize family empowerment, support, preservation, and independence
- Access to resources that assist families to stay together in place
- Policy impact statements that evaluate how policies may influence family viability
- Programs and research that emphasize family strengths
- Family policies that build on the strengths and the uniqueness of diverse Kentucky families, ethnicities, structures, and values

Poverty in Kentucky

The general poverty rates in Kentucky have increased. This increase appears to be driven by both higher poverty rates among younger working-age adults with children and by greater numbers of female-headed households with children. While poverty among the elderly declined over the 1979-1989 decade, elderly women, who have limited access to pensions and social security, continued to experience high rates of poverty. The driving forces behind Kentucky's poverty can be broken down into several categories: life cycle category, social composition factors, and regional economic factors, each of which offers its own possibilities for policy intervention.

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Legislative Research Commission

According to the most recent figures from the Bureau of the Census, 14.7 percent of Kentuckians were living in poverty in 1995. The key question addressed in this chapter is whether there have been significant changes in the level and distribution of poverty in Kentucky. The chapter starts with a discussion of the measures of poverty which are judged most reliable in identifying changing trends. Next is an overview of changes in poverty in Kentucky compared to the nation as a whole. Then a comparison between groups of Kentucky counties classified by population growth or decline highlights any differences over time. Finally, the chapter presents information regarding changes in the poverty status of specific segments of Kentucky's population.

Measures of Change in Poverty

A necessary first step in evaluating trends in poverty in the state is to determine which measures of poverty present a reliable measure of change. As noted above, the Bureau of the Census estimated that Kentucky's poverty rate in 1995 was 14.7 percent. Fifteen other states had poverty rate estimates greater than Kentucky's. However, one can only say with *confidence* that Kentucky had a lower poverty rate than five states; South Carolina, Louisiana, Alabama, Mississippi, and New Mexico had rates ranging from 19.9 percent to 25.3 percent. Although the other 10 states had higher *point estimates* on their poverty rates than Kentucky in the March 1996 Current Population Survey (CPS), the relatively small sample (nearly 700 households in Kentucky) used to estimate annual poverty rates between census years means that state-level annual estimates carry margins of error in the range of 1 to 2 percentage points above and below the point estimate.

The same limitation of the survey sample holds true for measuring change over time. To alleviate some of the problems related to small sample size, the Bureau of the Census combines annual data into multiyear averages. In their latest release of state-level annual poverty rates, the Bureau provided the average for 1994-1995 and the average for 1993-1994. Kentucky registered a 2.9 percentage point *decline* between the two-year averages. The two-year moving average increased in 19 states, showed no change in one state, and decreased in 30 states. However, even with multiyear averages, when the margin of error is recognized, only 10 states had statistically significant changes (nine decreased and one increased) in the two-year moving average poverty rates. Kentucky's 2.9 percentage point decline was statistically significant; only two states registered greater declines—Missouri and Louisiana.

The statistically significant decline of Kentucky's poverty rate is welcome news; however, not much more can be said—the sample size does not allow one to accurately measure changes in the substate geographic distribution of poverty or detailed characteristics of those in poverty. Also, statistically significant changes in CPS measurement of state-level poverty rates are the exception rather than the rule. In the prior year's CPS (March 1995), only three states had statistically significant changes between the two-year averages—Kentucky was not one of them. Kentucky's standard error for annual poverty rates, as measured by the CPS, consistently runs around 2 percentage points each year. This means that if a survey measures a poverty rate of 18 percent, there is a 90 percent probability that the rate is somewhere between 16 percent and 20 percent. The problem in measuring poverty in nondecennial census years is clear: *a real change in the poverty rate of 1 percentage point is a significant occurrence and yet it is well below the threshold of current sampling accuracy.*

Given the limitations of state-level measures of poverty in noncensus years, clear understanding regarding changes in Kentucky's poverty situation are only achievable through new uses of older decennial census information. This paper makes significant use of two pieces of information from the 1980 census and the 1990 census–county-level poverty data and Public Use Microdata Samples (PUMS), which will be described later.

Changes in Poverty in Kentucky and the United States

Table 4.1 provides the 1990 census poverty rates and numbers (based on 1989 income) for children (related children under 18), elderly (persons of age 65 or older), and all others, as well as for female-headed families with no spouse present with and without children, and all other families. In addition to the 1989 poverty rates, this table provides the change from the 1980 census (based on 1979 income) in both quantity and percent, as well as comparable figures for the United States.

The figures for children and elderly are interesting to compare. Note that between 1979 and 1989 the poverty rate for children in Kentucky increased 2.8 percent, to 24.5 percent, while for the elderly it declined 2.7 percent, to 20.6 percent. However, this does not mean that there were more children and fewer elderly in poverty. Quite the opposite was true: 292 fewer children and 358 more elderly lived in poverty (although for practical purposes, one could say these numbers were "flat" representing a change of less than 0.5 percent). The real change in both age groups occurred in those *above* poverty. There was a 14.9 percent *decrease* in the number of children above poverty and a 17.6 percent *increase* in the number of elderly above poverty. The same relative differences between those in poverty and those above poverty apply at the national level although the national figures reflect an overall growth in the population whereas Kentucky's population experienced no appreciable growth between 1980 and 1990.

In particular, among all states, Kentucky had the third largest percent decline (11.9 percent) between 1980 and 1990 in the total number of children under 18. Only Iowa and West Virginia had greater declines, 13.1 percent and 20.7 percent respectively. The nation overall had a 0.3 percent decline in the number of children over the same period. The observed loss of children at a much greater rate for those above poverty could be due to any one, or a mix, of several factors—greater out-migration of those above poverty, lower birth rates for those above poverty paired with natural loss due to aging, or movement to below poverty status for those who were previously above poverty. Without data that allows the tracking of individuals over time, definitive statements are not possible.

The significantly higher growth rate of elderly above poverty is clearly due to an aging population paired with government financial aid for the elderly. The numbers may also reflect greater longevity for the elderly not living in poverty, as opposed to those who do live in poverty.

TABLE 4.1
Poverty in Kentucky and the United States,1979-1989

Kentucky

	Poverty Rate		Number BELOW Poverty			Number ABOVE Poverty		
		Change from		Change from 1979			Change from 1979	
	1989	1979	1989	Number	Percent	1989	Number	Percent
Persons								
Elderly	20.6%	-2.7%	91,091	358	0.4%	350,794	52,505	17.6%
Related Children under 18	24.5%	2.8%	229,530	(292)	-0.1%	708,795	(124,501)	-14.9%
Other (mostly working-age adults)	16.4%	1.9%	361,206	55,521	18.2%	1,841,043	39,834	2.2%
Families With Related Children under 18								
Female-Headed With No Spouse	51.8%	5.9%	51,519	14,300	38.4%	47,884	4,134	9.4%
Other (mostly married couple)	14.4%	1.3%	62,897	1,263	2.0%	373,264	(36,403)	-8.9%

United States

	Poverty Rate		Number BELOW Poverty			Number ABOVE Poverty		
		Change from		Change from 1979			Change from 1979	
	1989	1979	1989	Number	Percent	1989	Number	Percent
Persons								
Elderly	12.8%	-2.0%	3,780,585	198,856	5.6%	25,782,062	5,209,427	25.3%
Related Children under 18	17.9%	1.9%	11,161,836	1,136,213	11.3%	51,116,819	(1,511,694)	-2.9%
Other (mostly working-age adults)	11.2%	0.9%	16,800,443	3,015,215	21.9%	133,336,114	13,084,076	10.9%
Families With Related Children under 18								
Female-Headed With No Spouse	42.3%	1.9%	2,866,941	644,502	29.0%	3,916,214	629,338	19.1%
Other (mostly married couple)	7.9%	0.4%	2,125,904	133,666	6.7%	24,627,601	175,214	0.7%

Source: U.S. Census Bureau

In Table 4.1, the "other persons" category, mostly working-age adults, makes up the majority of those in poverty. Although children have a higher poverty rate and experienced a greater percentage point increase in their poverty rate, working-age adults experienced an 18.2 percent increase in the number below poverty, while the number of poor children and elderly was basically unchanged between the two years.

The remaining information in Table 4.1 provides changes in poverty status for families with related children under 18. The two main categories presented here are female-headed families with no husband present and other families (married couple and male-headed with no wife present).[1] As one would expect, female-headed families with children but with no husband present had the highest poverty rate (51.8 percent); this type of family also had the highest percentage point increase (5.9 points). The percentage growth in the number below poverty was also the greatest (38.4 percent) for this type of family.

Again note that the number of families with children below poverty increased by 14,300 for female-headed families and 1,263 for other families, while the number of children in poverty dropped by 292. This indicates a significant change in the composition of poor families with children in Kentucky between 1979 and 1989. They must, on average, have fewer children, and a greater percentage are female-headed with no husband present. Relative to the United States however, Kentucky families in poverty have fewer female householders with no husband present. So, between 1979 and 1989, Kentucky experienced similarly high increases in numbers of female-headed families below poverty with no husband present (38.4 percent) as the United States (29.0 percent), but because Kentucky is generally a poorer state relative to the national average, other families compose a greater share of families in poverty both in real terms and relative to the nation.

The substantial decline (-8.9 percent) in the number of other families with children who had incomes above poverty is noteworthy. An offsetting increase of other families without children (not shown here) also occurred. These changes are likely due to a mix of factors, including less family creation, dissolution of families, postponement of childbearing, and, possibly, some movement from above poverty to below poverty classification due to changing economic circumstances. Again, without data which tracks individuals over time, it is not possible to determine which factors best account for these developments.

Changes within Kentucky

Table 4.2 is based on county-level poverty information for 1979 and 1989, extracted from the *USA Counties 1994 CD-ROM*. Table 4.2 presents similar information to Table 4.1, but rather than comparing Kentucky to the United States, the comparison is between totals for the 65 Kentucky counties that experienced a decline in population between the two decennial census years and the 55 counties that had population growth. The CD-ROM did not provide county-level information about families with children; therefore, that information is not provided in Table 4.2.

The 55 growing counties as a group experienced lower poverty rates and substantially lower increases in those rates between 1979 and 1989 for the nonelderly (children and other persons). The 65 shrinking counties as a group experienced substantially greater percent declines in the two nonelderly groups above poverty compared to those below poverty—a 22.2 percent decline in the number of children above poverty versus a 2.8 percent decline in the number below poverty. The significant growth rate differentials between those above and those below poverty led to the greater increases in poverty rates. So, for the shrinking counties, a portion of the nonelderly above poverty are either moving away or falling into poverty.

For the elderly, the level of poverty rates or the change in poverty rates did not differ as much between the two groups of counties. Additionally, for those counties experiencing population loss, the elderly are the only component of the population with a net increase in numbers, with all of the increase coming in the above poverty category. These two factors indicate reduced mobility for the elderly while the nonelderly are more likely to move.

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[1] For the purposes of this section, "children" are defined as those under age 18 who are related to the householder. Children related to the householder can include any child related by blood or marriage to the householder.

TABLE 4.2
Poverty in Kentucky Counties with Declining and Growing Populations, 1979-1989

65 Counties with Declining Populations

	Poverty Rate		Number BELOW Poverty			Number ABOVE Poverty		
		Change from		Change from 1979			Change from 1979	
	1989	1979	1989	Number	Percent	1989	Number	Percent
Persons								
Elderly	21.1%	-2.5%	49,497	(74[illegible]	-1.5%	184,825	22,621	13.9%
Related Children under 18	28.9%	4.4%	134,005	(3,857)	-2.8%	329,496	(94,000)	-22.2%
Other (working-age adults)	19.5%	3.2%	212,468	32,671	18.2%	875,951	(47,422)	-5.1%

55 Counties with Growing Populations

	Poverty Rate		Number BELOW Poverty			Number ABOVE Poverty		
		Change from		Change from 1979			Change from 1979	
	1989	1979	1989	Number	Percent	1989	Number	Percent
Persons								
Elderly	20.0%	-2.9%	41,594	1,103	2.7%	165,969	29,884	22.0%
Related Children under 18	20.1%	1.8%	95,525	3,565	3.9%	379,299	(30,501)	-7.4%
Other (working-age adults)	13.4%	0.8%	148,738	22,850	18.2%	965,092	87,256	9.9%

Source: U.S. Census Bureau

For those counties experiencing population growth, a drop of 7.4 percent in the number of children above poverty and a 3.9 percent increase in the number below poverty still occurred, with a net decline of about 27,000 children. This is remarkable in that the number of adults (elderly and nonelderly combined) increased significantly (141,000.) Together, these figures strongly indicate lower birth rates.

Similar analysis differentiating between *high-* and *low-population density* counties (not shown) yielded slightly different results. The counties with the higher population density in 1989 had lower poverty rates than, but *about the same changes in those rates* as, those with lower population density. The most noteworthy difference in the population density breakout was the differentiation for the elderly. Grouped by population growth, the poverty rate for the elderly differed slightly; however, when grouped by population density, the poverty rate for the elderly was much higher in the low-density areas. This indicates that, although the elderly may not be well represented among those who move into and out of areas of growth or decline, their well-being is somewhat related to the area in which they live, as measured by population density. Those in less dense or less developed areas are more likely to be poor, just like those in other demographic groups.

Changes in Detailed Characteristics of the Poor in Kentucky

All of the previously presented information relied on standardized summary tabulations as released by the Bureau of the Census. Certain detailed cross-tabulations are not released because of the Bureau's limited resources. To allow researchers to circumvent this limitation, the Bureau releases the actual census questionnaire responses of all persons living in a 5 percent random sample of households (addresses and names are withheld to protect confidentiality). This Public Use Microdata Sample (PUMS) allows researchers to formulate their own tabulations in order to answer questions which cannot be addressed with the standard set of summary tabulations. Table 4.3 (on page 38) provides tabulations from the 1990 PUMS along with changes from the 1980 PUMS. Note that because PUMS is a sample, all information in Table 4.3 is subject to some error. However, the large size of the sample (185,000 individuals) allows for analysis of fairly detailed segments of the population. The table is composed of three sections running horizontally across the page and representing, from left to right, three major groups of Kentuckians: adults in households with children, children alone, and the elderly.[2]

When examining the poverty status of detailed segments of a group, it is important to consider both the frequency and magnitude of poverty for each segment relative to others. This can best be accomplished through simultaneous examination of two measures—*poverty rate* and *share of poverty*. The *poverty rate* represents the frequency of the occurrence of poverty within the population segment; it is a measure of how *prevalent* poverty is among the people within the segment. The *share of poverty* indicates the magnitude of poverty for a given segment relative to other segments; it is the *share of all poor* that is composed of that particular segment of the population. Table 4.3 provides the poverty rate and share of poverty for 1989, along with the changes from 1979, for detailed segments within each of the three major population groups under review.

An example of the different kinds of information provided by analyzing both the rate and share of poverty for various population groups can be seen in examining the relationship between race and poverty in Kentucky. Note in the left columns that the 1989 *poverty rate* for black adults in households with children (29 percent) was nearly double the rate for the white adults in the same category (16 percent). However, black adults accounted for only about 11 percent of all poor adults in households with children because blacks comprise a relatively small portion (7 percent) of the Kentucky population. The fact that black adults account for a larger share of those in the subgroup in poverty than they do of the entire population shows that they are overrepresented among the poor.

Adults with Children in Poverty

Childhood poverty continues to be an area of focus for public policy proposals. The increasing percentage of children in poverty raises concerns about future economic opportunities for Kentucky and the future fiscal impact on the state. Keeping all other factors constant, an increase in poverty in the state tends to decrease the amount of revenues received by state and local governments while increasing their expenditures. However, children are not the only focus of policy concern. Children are not poor by their own design, but rather because the adults responsible for their care cannot, or do not, provide a sufficient income to raise themselves and their children out of poverty. Therefore, in order to come to a fuller understanding of the causes of poverty among children, it is necessary to examine the characteristics of the adults responsible for their care.

One change among adults with children in poverty was in the distribution of poverty by age segment. Between 1979 and 1989, the two segments of older working-age adults with children (36 to 65) experienced little change in poverty rate while the two segments of younger working-age adults with children (19 to 35) experienced significant increases. The share of poor adults with children comprised of those in the 26 to 45 age segment increased while the shares comprised of those both older (46+) and younger (19-25) decreased. The aging of the Baby Boom generation likely accounts for this increased share, as it accounts for such a large share of the population in general.

Tabulations regarding household size, number of persons in the household, and number of associated children indicate a significant decline in the share of poverty represented by large families with many children. These larger families have the highest poverty rates (which is not surprising given that poverty status is determined partly by household size) as well as the greatest increases in those rates, but their *share* of poverty is declining. This drop in share is likely due to a general reduction in family size and an increased incidence of poor, single-parent families. These are likely to be smaller because of the absence of additional adults and because the household heads are likely to be younger and, therefore, have fewer children.

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[2] Poverty status as calculated here is identical for all individuals in the same household and is based on household income. This differs from the traditional census measure reported thus far where the calculation of an individual's poverty rate depends on whether the person is related to the head of the household (householder). Individuals related to the householder who are under 18 or are the spouse of the householder all share the same poverty rate based on the family's income; people 15 years or older who are not related to the householder, or are the householder of a nonfamily household have individual poverty rates based on individual income; finally, poverty status is not measured for children under 15 who are not related to the householder. In this method, the census is assuming that children under 15 not related to the householder may not have access to the householder's income so their poverty status should not be measured. For purposes here, the desire was to exclude the least number of children from poverty status measurement.

Families with two parents present may be better able to survive economically during a downturn in the economy, or anytime for that matter, because they have the potential for two wage earners in the family. Also, average earnings of female-headed families with one wage earner is only 64 percent of those of married couple families with one wage earner and 31 percent of those of married couple families with two wage earners (and 72 percent of those of male-headed families with one wage earner, although very few of these exist.)[3] Not surprisingly then, adults in female-headed households with children had the highest poverty rate (42.2 percent) among all family types in 1989. This was up 3 percentage points from 1979. Adults with children in married couple families still accounted for the largest share (63.1 percent) of all poor families, but that share was nearly 7 percentage points lower than in 1979, while the poverty rate for the group was essentially unchanged. This means that married couple families made up a smaller share of all families. Conversely, female-headed households with children increased as a share of all families, but particularly, as a share of poor families.

The tabulation of marital status further outlines the changing characteristics of households in poverty. Those adults in households who have children and who are divorced, separated, or never married had the highest poverty rates, experienced the greatest increases in those rates and showed the greatest increase in the share of those below poverty. These observations highlight, once again, the trend toward an increasing number of single-headed households (mostly female-headed) and point to their heightened vulnerability.

As the tabulation for educational attainment indicates, the two population segments with a high school education or less continue to make up a preponderance of those with incomes below the poverty level (86.6 percent). Poverty rates are much lower for those who have at least some college attendance. Adults with the least education (eight years or less) had by far the highest poverty rate (42.1 percent) and the greatest increase in that rate (10 percentage points). However, the share of the poor who had less than an eighth grade education declined significantly. As was the case with the population in general, those below poverty were increasingly more educated in 1989 than in 1979. Note the 9.8 and 4.8 percentage point increases in the share of poverty for groups with 9 to 12 years of school and one to four years of college, respectively. However, this increased level of education is not just a reflection of changes in the general population, for those with 9 to 12 years of school experienced a significant increase in poverty rate (5.9 percentage points), while those with college experienced little change in poverty rate. Today's labor market demands highly skilled workers, and those workers armed with only a high school education have fewer prospects. For workers with less than a high school education, the outlook is even more bleak.

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[3] Calculations from data contained in Table No. 678: Families With Earners—Number and Earnings: 1980 to 1993. (1996). *Statistical abstract of the United States, 1995*. Washington, DC: U.S. Government Printing Office, 434.

TABLE 4.3
Poverty Rates and Distribution by Detailed Population Characteristics, Kentucky, 1979-1989

	Adults in Households with Children					Children 18 or Under					Adults 65 or Over			
	Poverty Rate		Share of Poverty			Poverty Rate		Share of Poverty			Poverty Rate		Share of Poverty	
	1989	Change from 1979	1989	Change from 1979		1989	Change from 1979	1989	Change from 1979		1989	Change from 1979	1989	Change from 1979
Age					Age					Age				
19-25	25.8	5.9	23.1	(3.6)	5 or under	26.4	3.1	34.2	2.3	65-70	18.1	(3.1)	30.6	(3.3)
26-35	18.0	4.5	38.0	7.3	6 to 12	23.3	1.7	38.3	2.1	71-75	22.2	(4.5)	23.8	(2.8)
36-45	12.2	(0.4)	23.5	2.5	13 to 15	20.7	(1.4)	14.4	(2.7)	76-80	27.5	(3.2)	22.3	1.1
46-65	15.9	(0.8)	13.1	(5.2)	16 to 18	19.9	1.2	13.1	(1.6)	81-85	29.5	(2.6)	14.3	2.8
Over 65	20.2	(4.4)	2.2	(1.0)						Over 85	32.6	0.4	9.0	2.2
			100.0					100.0					100.0	
Sex														
Male	14.4	1.0	39.4	(2.3)		23.4	2.0	51.6	1.3		16.9	(4.8)	29.4	(5.5)
Female	19.4	2.2	60.6	2.3		23.3	1.2	48.4	(1.3)		27.2	(1.7)	70.7	5.5
			100.0					100.0					100.0	
Race														
White	16.2	1.8	88.2	0.8		21.8	1.7	85.2	1.1		22.4	(2.6)	91.6	1.4
Black	29.0	2.4	11.1	(0.7)		41.5	1.6	14.0	(1.2)		35.3	(3.9)	8.3	(1.2)
Other	13.9	(6.8)	0.7	(0.1)		20.6	(7.4)	0.8	0.0		9.7	(20.3)	0.1	(0.2)
			100.0					100.0					100.0	
Number of Associated Children														
One	12.9	2.7	34.7	7.9										
Two	16.2	2.3	35.0	2.9										
Three	26.1	6.0	19.8	(0.5)										
Four	38.0	6.6	7.0	(4.3)										
Five	44.7	(1.2)	2.3	(4.1)										
More than Five	57.2	11.3	1.3	(1.9)										
			100.0											
HH or Family Type														
Married Couple	12.9	0.6	63.1	(6.8)		16.2	0.0	54.5	(6.9)		13.2	(4.6)	31.9	(7.2)
Male Householder	26.8	2.7	4.9	1.7		32.7	2.8	4.8	1.7		16.6	(2.8)	1.7	(0.6)
Female Householder	42.2	3.0	31.3	5.0		53.8	2.0	40.1	5.1		19.4	0.2	6.9	(0.2)
Nonfamily Household	16.3	(2.6)	0.7	0.2		21.5	(5.4)	0.6	0.1		40.6	(3.5)	59.6	8.0
			100.0					100.0					100.0	
Marital Status														
Now Married	13.3	0.7	60.7	(5.4)										
Widowed	27.2	(1.1)	3.3	(2.0)										
Divorced/Separated	34.7	2.8	20.6	5.7										
Never Married	26.9	4.2	15.3	1.7										
			100.0											

*(Table continued on next page)

TABLE 4.3 (continued)

	Adults in Households with Children				Children 18 or Under				Adults 65 or Over			
	Poverty Rate		Share of Poverty		Poverty Rate		Share of Poverty		Poverty Rate		Share of Poverty	
	1989	Change from 1979	1989	Change from 1979	1989	Change from 1979	1989	Change from 1979	1989	Change from 1979	1989	Change from 1979
Attending School												
Not in School	17.3	1.8	93.5	(2.8)	27.9	2.4	21.7	(14.9)				
In School	14.4	2.1	6.5	2.8	21.6	1.6	78.4	14.9				
			100.0				100.0					
Years of School												
8 years or less	42.1	10.0	23.0	(14.1)								
9 to 12 years	20.1	5.9	63.6	9.8								
1 to 4 years of college	6.9	0.6	12.7	4.8								
More than 4 years of college	2.1	(1.3)	0.7	(0.4)								
			100.0									
Worked During Year												
Yes	10.5	0.7	47.6	1.8								
No	39.5	10.1	52.4	(1.8)								
			100.0									
Number of Weeks Worked During Year												
None	39.5	10.1	52.4	(1.8)								
1 to 13	35.9	6.5	11.8	1.2								
14 to 26	25.9	4.2	9.3	0.8								
27 to 39	16.5	2.4	6.2	0.1								
40 to 51	8.9	1.6	7.7	0.1								
52	4.8	(0.4)	12.6	(0.3)								
			100.0									
Usual Hours Worked Per Week												
None	39.5	10.1	52.4	(1.8)								
1 to 20	20.3	3.8	7.3	1.4								
21 to 39	16.3	3.7	13.1	4.0								
40 hours	9.4	0.4	20.3	(2.0)								
More than 40 hours	5.7	(1.9)	6.9	(1.5)								
			100.0									
Family Income: Percent of Poverty Level												
0 to 50 Percent					100.0	-	50.5	4.5	100.0	-	17.8	0.7
51 to 75 Percent					100.0	-	25.6	0.1	100.0	-	35.6	(2.9)
76 to 100 Percent					100.0	-	23.9	(4.6)	100.0	-	46.6	2.2
							100.0				100.0	

Source: U.S. Census Bureau, Public Use Microdata Sample (PUMS) 5 Percent for 1980 and 1990

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Measures of the degree to which a person is a part of the workforce are provided in the tabulations of "Number of Weeks Worked During the Year" and "Usual Hours Worked per Week." As can be seen, of the adults in households with poor children, more than 50 percent did not work at all in the preceding year, and 73 percent worked 26 weeks or less. The poverty rate for the group who did not work at all during 1989 was 39.5 percent, 10 percentage points higher than in 1979. There was very little change in the distribution of number of weeks worked among poor adults with children. So, for this group the extent of work through the year did not change much between the decennial census years, but those working the fewest number of weeks had the highest poverty rates and the greatest increase in those rates.

Characteristics of Children in Poverty

As stated earlier, the defining characteristic of children in poverty is that they live with adults who cannot provide a sufficient income to raise them out of poverty.[4] For the most part, the changes in rates and distribution of poverty noted above for adults apply similarly to children, where applicable. However, the poverty rates for children are higher than the corresponding rates for adults across the board.

Just as the youngest adults had higher poverty rates, so do the youngest children (these are likely the children of those youngest adults). Poor children aged five or under represented more than one third of all children in poverty, and this youngest age group experienced the greatest percentage point increases in poverty rate and share of poverty. Children in female-headed households comprised 40.1 percent of those below poverty. These children had a poverty rate of 53.8 percent, much higher than the 16.2 percent for children living in married couple households.

Additional insight can be gained from examining the distribution of those below poverty in terms of their depth of poverty. After all, a family with income at 50 percent of the federally defined poverty level has only about half as much income as a family that is slightly below the poverty level. For children, the distribution of those below poverty is disturbing, in that over half were in households with incomes at or below 50 percent of the poverty level. There was an increase of 4.5 percentage points in the share these poorest of children comprised of all poor children. Also troubling is that the segment of poor children in households with 76 to 100 percent of poverty level was the segment which experienced the corresponding decline in share of children below poverty. Thus, although there was a slight decline in the total number of poor children (as shown in Table 4.1), these slightly fewer children are deeper in poverty.

Characteristics of Elderly Kentuckians

Between 1979 and 1989, the elderly in Kentucky did not experience the same changes in poverty as the other groups. The poverty rates of all but the oldest age segment declined over the period. The rate for the oldest segment was essentially unchanged. Even with these observed declines, the elderly still have higher poverty rates than working-age adults. Also note that, for the elderly, the oldest have the highest poverty rates but represent the *smallest* share of the elderly poor. By way of comparison, among children the youngest have the highest poverty rates and represent the *greatest* share of poor children. The former may often be a case of persons exhausting financial resources and, thereby, falling below the poverty level, while the latter may be a case of children starting out in families with insufficient financial resources.

In 1989 more than 70 percent of the elderly poor were female, a share which increased by 5.5 percentage points over the decade. The increase is likely attributable to the greater life expectancy and somewhat limited attachment to historical income (such as through pensions or social security payments based on lifetime earnings) for elderly women. The poverty rate for both elderly females and younger adult females was greater than that for the males in each of the respective age groups. However, the poverty rate for elderly females (27.2 percent) was significantly higher than the poverty rate for younger adult females (19.4 percent).

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[4] For purposes of this analysis, children are defined as persons 18 years or younger and are not necessarily related to the head of the household, as they were in the Bureau of the Census category definition used in the previous sections.

Another major change for the elderly poor was the substantial decline in the poverty rate for the elderly in nonfamily households (down 44.1 percent) even as this living arrangement accounted for a growing share of both poor and nonpoor elderly households. It would appear that one way in which the elderly have attempted to improve their economic security is by joining with nonfamily members to share scarce resources.

The final tabulation provides the distribution of elderly below poverty in terms of their household income as a percent of the federal poverty level. The figures provide a further contrast between the nature of poverty among the elderly compared with poverty among children. Note that the distribution for the elderly poor is inverted compared to that for poor children. Over 80 percent of the elderly poor were in households with incomes greater than one half of the poverty level, mostly unchanged from 1979. The comparable figure for the share of poor children was less than 50 percent with a decline of over 4 percentage points from 1979. Thus, the elderly poor do not experience the concentration of deep poverty which afflicts Kentucky's poor children.

Summary and Implications

Definitive state-level poverty measurement is only available in snapshots taken once every 10 years with the decennial census. While care must be taken to not overrepresent changes between two points in time as indicative of trends, insights can be gained from observing the changed poverty situation of Kentucky vs. the United States, of Kentucky's growing vs. declining areas, of Kentucky's elderly compared to young adults with children, and of the changing composition of poor families in Kentucky.

Throughout the analysis, several themes recur. Clearly, the young in Kentucky were worse off in 1989 than they were in 1979, and the elderly were better off, yet still experienced high rates of poverty. The general increase in poverty rates in Kentucky between 1979 and 1989 appears to be driven both by higher poverty rates among younger working-age adults with children and by greater numbers of female-headed households with children (not mutually exclusive groups). These groups are comprised of individuals most likely to have small children, which explains why over one fourth of the youngest children were below poverty and why their poverty rates increased so much.

The increases in poverty rates among the younger working-age population between 1979 and 1989 was indicative of an economy that did not provide economic opportunities matched to the skills and location of its younger citizens. Persons who are above poverty are more likely to be able to avail themselves of education and leave impoverished areas, hence the significant decline in numbers of persons above poverty, and the widely observed out-migration from counties with the highest poverty rates. However, even counties that had the higher growths in population experienced a loss of children above poverty. This could be due to a lifestyle decision observed among those with higher incomes to postpone having children until later in life, which may result in a disproportionate lowering of the birthrate among those above poverty.

The elderly on the other hand, while having higher poverty rates than the overall population, experienced significant declines in those rates between 1979 and 1989 across all breakdowns for analysis—indicative of the benefits afforded by federal support programs. Elderly women had a significantly higher poverty rate than elderly men and comprised about 70 percent of the elderly poor. This is due both to less attachment to historical income for elderly women and to their longer life expectancies. The experience of the oldest segments of the elderly (higher poverty rates and an increasing share of the elderly in poverty) is likely due to an exhaustion of fixed or limited incomes, particularly relating to medical expenses, for an ever increasing number of people living past the life expectancies that existed when they or their spouses entered retirement.

The driving forces behind Kentucky's poverty might be broken into several categories, each with its own possibilities for policy intervention. Poverty associated with the *life cycle category* might be defined as that related to older people exhausting their assets and younger people trying to get started in life. Poverty associated with *societal composition factors* might be defined as that related to changes in family size, structure, and demographic characteristics. Examples are the increase in the number of female-headed families, possible differences in fertility rates between poor and nonpoor families, and an increase in the general educational level which means that those with some high school or a high school diploma account for an increasing share of the poor. Finally, poverty associated with *regional economic factors* is related to a general lack of economic opportunities in the surrounding area and the propensity of those with the ability to seek opportunities elsewhere to leave.

While the poor of Kentucky fall into all of these categories, the last category appears to play a prominent role in distinguishing Kentucky's experience over the decade from that of the nation as a whole. For the future, it is safe to say that areas which remain economically depressed are likely to continue to experience out-migration that will be comprised mostly of those able to find work elsewhere. Those unable to move (the elderly), and those unable to find jobs with sufficient incomes (the unskilled, female heads of households) and their children, are likely to find themselves living in areas where poverty is increasingly common. Given that Kentucky has a declining number of children, who are increasingly living in the deepest poverty, and given the well documented research which indicates that poor children are less likely to grow into economically productive adults (particularly in an economy which demands increasingly complex skills), the greatest change indicated by the analysis is not between the nature of Kentucky's past and its present, but rather that its future seems so much more at risk.

Assessing the Future of Housing in Kentucky

The author provides a brief national history of housing and focuses on long- and short-term demographic and economic trends influencing the housing market in Kentucky. Long-term demographic trends, particularly the aging of the Baby Boom generation and its movement into peak earnings and move-up years, signals continued strength in the quantity and quality of single-family housing in the state. In addition, increases in the number of two-income households will continue to be a force in the demand for upper income housing. Housing for low-income Kentuckians, on the other hand, is becoming increasingly scarce, and government assistance less certain.

By F. Lynn Luallen
Kentucky Housing Corporation

Fifty years ago, Franklin D. Roosevelt recognized that we were "one third of a nation ill-housed." Today, while conditions are quite different and much of the nation is overhoused, some 20 percent of households in the nation and 24 percent of households in Kentucky remain, as Roosevelt described, "ill-housed." Fifty years ago, the majority of housing problems related to the condition of people's housing. Today, conditions have improved markedly, but the affordability of housing has become a more serious problem, one that is affecting current housing and will continue to do so in the years ahead.

The following trends must be addressed in any assessment of the likely future of Kentucky's housing market:

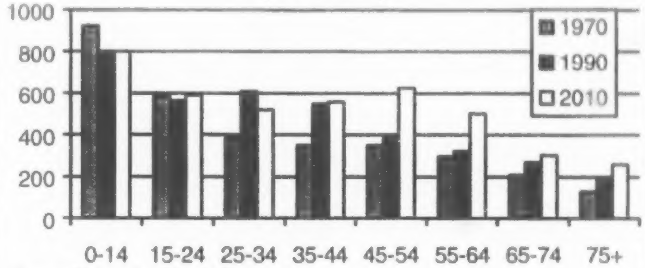
- Changes in population and demographics
- The impact of interest rates and employment on housing affordability
- Housing starts and home ownership
- Options for lower income housing

Changes in Population and Demographics

The largest and most important impact on the housing market is tied to changing demographics, specifically the aging of the Baby Boom generation. Born between 1946 and 1964, Baby Boomers are now in their peak move-up years, signaling corresponding strength in the quantity and quality of single-family housing. Members of the Baby Boom generation are also in their peak earning years now, which indicates continued strength in the move-up market. Two-income households continue to grow among all household segments and will remain a force in the demand for upper income housing. During the second half of the 1990s and into the early 21st century, the trend for housing is positive. After that, the nation and Kentucky could face some real problems due to the long-term demographics of the population.

The whole of the nation's housing has two identities: much higher standards at the top than at the bottom. Market rate construction is geared toward the top third of the market where profits are readily made and where the industry has achieved very high production levels. This portion of the market drives the industry. On the other side, housing has its problems, including the decay of cities, where poverty, crime and drugs have escalated, as places to live. Some corporations, for example, have chosen to abandon existing urban sites rather than pursue rehabilitation and modernization. In turn, jobs have been relocated, and people have abandoned cities.

FIGURE 5.1
Population of Kentucky, 1970-2010
(in thousands)



Source: University of Louisville

U.S. and Kentucky households have typically chosen to live in low-density, auto-oriented and auto-dependent communities, close to metropolitan areas but not actually in them. Today, the majority of Kentuckians live in single-family houses located in relatively low-density subdivisions. The majority of past and projected future growth is in and around the state's three largest metropolitan areas with housing near the interstate highway systems of I-64, I-65, I-71, and I-75. The clear preference is for the stand-alone subdivision.

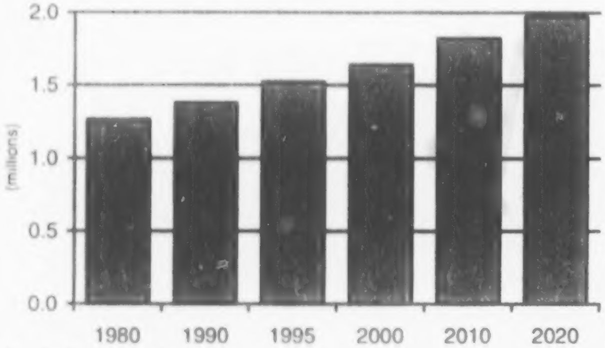
A question or concern often raised is: Can this development preference continue as it moves farther out from the support of urban areas? Since the underlying forces that drive these patterns have not changed, and are not likely to do so until some time after the last of the Baby Boom generation passes through its housing move-up phase, this pattern will continue well into the next century. In addition, improvements in communication and transportation will enable these development trends to continue unchecked. However, basic subdivision design may change, as low-density, auto-oriented, stand-alone community developments, also known as "urban sprawl," have many critics.

Vocal critics suggest that the stand-alone subdivision corrodes neighborhood values by increasing dependency on cars, separating people and diminishing community life. Nationally, there is a move fueled by a school of planners called New Urbanists who advocate the creation of "villages" instead of subdivisions. The concept calls for mixing housing sizes and styles, commercial entities, and recreational amenities all in the same development. The end result is a community with a variety of architecture, income levels, and business establishments.

This theory of New Urbanism is being met with resistance in traditional states like Kentucky. However, it is a trend that is likely to become more prevalent. It is a design approach that uses land more conservatively by clustering buildings and services and preserving open spaces. As recent history has illustrated, land use is a top concern for local governments which must provide infrastructure and services to citizens. Moreover, many citizens wish to preserve more green space and plan housing developments accordingly.

Long-term trends in housing will be determined primarily by the numbers and the composition of households. The number of households is dependent on the age structure of the population. Historical trends have shown that the majority of household formation occurs in the 25- to 34-year age group. Nationally, this group will decline from 19.8 million in 1990 to 17.2 million in 2000. In Kentucky, 25- to 34-year-olds are projected to decline from 610,000 in 1990 to 522,000 in 2010. In addition, household composition is changing; 25- to 34-year-olds are delaying marriage and childbearing, as well as getting more divorces, choices which strongly influence

FIGURE 5.2
Kentucky Household Forecasts



Source: University of Louisville

housing decisions. Single heads of household with children are also increasing; nearly one in four children lives with one parent. Because they are far more likely to be poor or low-income, housing decisions are profoundly influenced by household composition. The impact of these trends and the aging of the Baby Boom generation on the housing industry will become more significant after the turn of the century. Total households in Kentucky are projected to increase from 1,379,782 in 1990 to 1,643,609 in 2000.

Housing Affordability

During the 1970s, poverty in the state declined dramatically, from 23 percent of the population in 1970 to 18 percent in 1980. The improved economic circumstances of the lives of Kentuckians were accompanied by a corresponding decline in substandard housing. The number of homes without a bath, kitchen, or water was substantially reduced. In 1970, more than 20 percent of homes in Kentucky had no indoor plumbing, but by 1980, only 9 percent were without indoor plumbing.

By the late 1970s, mobile homes had also assumed a significant role in Kentucky's housing market, moving from 4 percent of the state's housing to 10 percent in just one decade. Mobile homes are usually moved only once, inexpensive, and financed like a car on the installment plan, enabling home ownership among lower income households. The number of mobile homes increased in Kentucky from 43,000 in 1970 to more than 125,000 in 1980, a 190 percent increase.

In the 1970s, Kentucky followed housing trends similar to those which were evident nationally. Population was increasing rapidly and employment and income grew strongly. The national recessions of 1970-1971 and 1974-1975 did not affect Kentucky as severely as other states. Employment growth remained several percentage points above the nation from 1970-1976. At the same time, Kentucky was producing record levels of housing, with the majority of housing growth occurring around urban areas. The stand-alone subdivision was the favored development. New housing units increased by 29 percent between 1970-1979, with nearly all the growth in single-family detached homes. This growth in housing was supported by a great expansion of mortgage debt—a growth that has continued, now doubling every six to seven years.

In the early 1980s, Kentucky saw a rapid reversal of trends of the 1970s. The 1980-1983 recession affected Kentucky more adversely than the nation as a whole, and in many ways, the state has never been the same. During the 1980s, employment growth slowed dramatically as did population growth, and out-migration increased. With interest rates prohibitively high, employment down and incomes below the rising cost of goods, housing demand in Kentucky declined. Household formation and employment expectations were also depressed. Housing prices increased 18 percent per year from 1980 to 1983, while median family income declined by 10 percent overall during this period. The loss of demand hit the housing industry in Kentucky hard, as housing starts declined 23 percent each year from 1979 to 1982.

The nation and Kentucky began a recovery in 1983, but the remainder of the 1980s were far from stellar for housing in Kentucky. Progress made in the 1970s all but halted. The volume of housing construction throughout the 1980s remained weak. More importantly, incomes, while improved from the recession, never fully recovered, and growth in income remained well below national averages. Housing prices, however, which had increased during the recession, continued at a strong pace—almost three times as fast as average incomes. When housing production began to pick up again, it continued to be concentrated in the state's urban areas, the majority within the interstate highway triangle of I-75, I-71, and I-64. The favored development continued to be the stand-alone subdivision on the edges of the state's cities. Over 70 percent of Kentucky's housing production was of this type and in these areas.

The 1980s found the affordable and assisted housing market in even worse shape. Federal housing funds were cut by more than 70 percent. Since the 1980s, a fairly strong correlation has existed between declines in federal housing support and increased housing problems and poverty.

As noted, poverty in Kentucky was reduced in the 1970s from 23 percent to less than 18 percent. During the 1980s, poverty in the state increased from below 18 percent to 19 percent.

The 1990s have been a period of more stability for Kentucky with some recovery from the economic changes of the 1980s. Population and household formation have stabilized in a slow-growth pattern, and the state has benefited from five years of economic growth. However, this has been a sluggish period, only about half as strong as previous expansions. The housing industry, on the other hand, has been fairly strong with the majority of growth in the move-up market.

Housing starts in the state have averaged over 15,000 per year since 1990, 43 percent greater than the same period in the 1980s. In addition, the size and cost of new housing have been increasing, providing greater profit margins for builders. Housing conditions are clearly an important component in continued economic growth and in the overall improvement of the standard of living in the state. In the middle market, the population is moving up in quality and moving from renting to owning, or at least obtaining better quality rental housing. At the bottom is housing that is minimally adequate. The disparity in wage and income inequality, which began in the early 1980s, continues to manifest in the housing market. The vast majority of housing is built for the top third of the market.

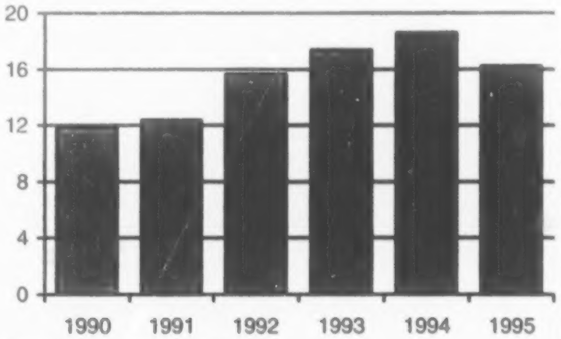
The recession in early 1990 slowed housing production, but since then, the state and national housing sectors have been growing at a fairly strong pace. As the economy enters its sixth year of expansion, the total housing market has enjoyed over four years of growth, with a short pause in 1995 and stable growth expected through 1997. Interest rates should stay at a reasonable level through the year, moving within a fairly narrow range of 7.25 to 7.75 percent. So while mortgage interest rates are important to short-term housing activity, other variables will be more influential over the next biennium, primarily employment and employment expectations.

Housing Starts and Home Ownership

Households pass through relatively predictable housing cycles—starting out as young renters, to first-time buyers, to move-up buyers, to long-term owners, and finally to retirement home buyers. The Kentucky housing market is now dominated by the move-up buyer, with households aged 45 to 64 providing most of the demand. In addition, the young adult population, aged 25 to 34, is declining and slowing the demand for apartments and starter homes. This trend will continue into the next century as this portion of Kentucky's population continues to decline. Between 1990 and 2020, the move-up market will increase by 58 percent while young renters and first-time buyers will increase just 3.5 percent.

Housing starts have been on an upward trend since 1990. Nationally, on average, more than 1.3 million new starts of single-family and multifamily housing have occurred each year over this period. Generally, one million annually is considered a good pace for housing starts. Kentucky's housing market has equaled or bettered this trend, with starts averaging more than 15,000 per year since 1990. For Kentucky, a healthy pace of housing starts is around 10,000 annually.

FIGURE 5.3
Housing Starts, Kentucky



Source: National Planning Association

Forecasts for 1996 indicate a 2.6 percent increase in housing starts over 1995. Single-family starts are expected to increase 2 percent to just over the one million unit level. Housing starts in the state have been increasing at an *average annual rate* of 7 percent and should continue at or near this pace during 1996-1997. The first quarter of 1996 indicates that the year could be one of the best ever for home builders in Kentucky. Market conditions are solid, interest rates are among the best in a decade; job growth is decent; and the misery index (the sum of unemployment and consumer price levels) has descended to levels not seen since the 1960s. Both the economy and the housing sector are expected to continue at current rates into the foreseeable future.

Options for Lower Income Housing

The U.S. Department of Housing and Urban Development (HUD) celebrated its 30th anniversary recently, but dramatic change is on the horizon. Started in 1965, HUD was to be a key player in the nation's war on poverty and the Civil Rights Act, efforts that sought to raise incomes and give families the means to improve their own housing. Potential changes to this federal agency are vitally important to Kentucky. For example, last year alone, the department insured more than 10,000 home mortgages in Kentucky and since 1974 has financed or subsidized more than 41,000 affordable rental units in the state—enough housing for a city the size of Bowling Green or Owensboro. Unfortunately, some of HUD's programs are regarded by many as ineffective. It must be remembered, however, that the agency has never received funding adequate to meet its lofty goals. Now threatened, HUD has proposed rather dramatic changes, which, if implemented, will pose fundamental challenges for housing policy at the national and the state level.

One proposal called Portfolio Reengineering would potentially affect 38,700 households in Kentucky whose apartments are subsidized by the Section 8 program. The goal of Portfolio Reengineering is to end project-based rental assistance oversubsidization. It is an effort to put the affordable housing portfolio on sound footing. In addition, it may move federally subsidized and regulated rental projects to state and local control. It is clear that HUD must do something with its Section 8 project-based portfolio. The costs are simply too high. For example, 140,000 project-based contracts are expiring in 1996; renewal will cost an estimated $4 billion. If significant changes are not made soon, Section 8 contract renewals will consume HUD's entire projected budget by the year 2000. The Portfolio Reengineering concept moves away from project-based (where assistance is tied to the rental housing) and focuses on tenant-based (where assistance is tied to the renter). This policy has strong support from both Congress and HUD. While it may cost more in the short-term, it should save over the long run.

Another proposal that may also be considered by HUD is consolidation of 60 separate programs into three block grants: the Certificates Fund, Housing Fund, and Community Opportunity Fund. This block grant approach has been implemented in several HUD programs in recent years. It is an approach that offers states flexibility in designing programs that meet local needs. Block grants for local housing authorities are a new concept. Instead of receiving funds directly from HUD, local housing authorities may compete for funds to operate public housing through the three block grants noted above, primarily the Certificates Fund, and they must submit a strategic plan. In addition to competing for funds, local housing authorities may have to compete for residents. Competition may be fueled by new units produced through the FHA Multifamily, Low-Income Housing Tax Credit, and HOME Programs.

Kentucky Housing Corporation (KHC) has developed a strong working relationship with HUD and implements many of its own lower income housing initiatives. Created in 1972, KHC has been a source of lower rate mortgage financing. In 24 years of existence, the Corporation has touched 1 out of every 20 Kentuckians primarily by: (1) issuing more than 40,000 mortgage loans to qualified home buyers through the sale of tax-exempt bonds; (2) providing more than 36,000 lower income households with rental assistance through HUD programs; and (3) financing and/or funding grants for rehabilitation, new construction and revolving loan pools.

The Corporation's primary directives are to provide below market rate mortgage financing to low- and moderate-income Kentuckians; offer home ownership education and loan servicing programs; provide below market rate construction financing to home builders and developers to produce affordable single-family and multifamily housing; serve as the state public housing authority to administer federal rental assistance in areas without local housing authorities; administer the

Low-Income Housing Tax Credit Program; and administer the federal HOME Investment Partnerships, Emergency Shelter Grant, and Housing for Persons with AIDS Programs.

There is the potential for major changes on the horizon in the affordable and assisted housing markets of Kentucky. While KHC works with a wide range of federal housing agencies, clearly HUD is of major importance. As previously noted, the changes proposed for HUD will have a major impact on the Commonwealth. For Kentucky, block granting of HUD programs will mean more control and flexibility, but also fewer federal resources. Even if basic funding survives, the need to manage programs at the local level will require more resources from state and local governments. In the coming biennium, expect HUD to focus on the reform of public housing, the consolidation of homeless assistance, Portfolio Reengineering, and home ownership initiatives.

The state's housing stock provides one of its greatest resources—a home and family life for over one million Kentuckians. In too many cases, however, Kentucky households are not fully benefiting from this resource. The cost of quality housing continues to climb while economic opportunities and subsequent wages have not kept pace. In addition, the state still faces many discriminatory barriers which restrict housing opportunities for minorities. Working to remove these can improve the quality of life for many Kentuckians and at the same time, open markets to first-time buyers and the underserved, which will benefit the entire housing industry. As indicated previously, the federal government's role in housing has been important to Kentucky. The current trend toward delegating more responsibility to the states will impact Kentucky's low-income households.

All levels of government and the private sector must continue to work in partnership if Kentucky is to improve housing for the bottom one third of the market. Housing that is affordable to low-income households continues to disappear, and housing programs designed to assist these households have been hard hit and could shrink more if current proposals are carried forward.

Kentucky also continues to face the possibility of losing the important Low-Income Housing Tax Credit Program. It is practically the only way to finance low-income rental housing and accounts for a large percentage of total multifamily production in the state. At best, Kentucky will see housing funds for the lower third of the market being distributed through block grants with slightly more flexibility, but at reduced levels. Over the next biennium, expect strength and growth in the top one third of the housing market, slight improvements in the middle third, and loss of available assistance and declines in quality in the bottom third.

Conclusion

Affordability is the key issue in housing. If the economy is favorable and current trends prevail into the next century, Kentuckians will continue to seek single-family housing in stand-alone community developments. With shrinking federal housing assistance, state and local governments will be charged with more responsibility for the housing of lower income individuals and families.

To decrease the growing difference and distance between higher income single-family housing and lower income multifamily housing, the concept of New Urbanism offers a potential alternative that may become increasingly influential in planning. Designed to blend economic diversity and instill neighborhood pride at all income levels, this concept is gaining acceptance in many areas. Several years will have to pass before the success of the New Urbanism can be measured, but it may be a positive approach to meeting future housing needs of all income levels with equal access to jobs, schools, and transportation.

The next biennium will be one of continued strength and growth for housing in the Commonwealth. Look for housing production and prices to increase, especially in the move-up market. More responsibility will be given to local governments for housing lower income individuals and families. Historically, Kentucky is a state that has met challenges and will continue to do so.

The View from the Heart of the Health Care Revolution

In 1995, the Kentucky Health Interview and Examination Survey (KHIES) provided us with our most comprehensive look at the current health status of Kentuckians. Some unsettling results include: access deficiencies, geographic and economic exclusion from the health care system, high prevalence of chronic diseases, inadequate programs for children's and women's health, insufficient utilization of preventive services, significant obesity, and depression reported in 11 percent of adults age 45 to 64. Some trends already well under way may address these areas of need while others may exacerbate health care problems in Kentucky. As we develop our vision for the future, goals for an effective health care system must include expanding access, enhancing quality, benefiting communities and managing costs.

By Forrest Calico[*]
Appalachian Regional Healthcare

In 1995, under the auspices of the Kentucky Department for Health Services and the University of Kentucky Center for Rural Health, the *Kentucky Health Interview and Examination Survey* provided us with our most comprehensive and unbiased look at the health status of Kentuckians. The results reveal an unsettling picture of the physical and emotional readiness of citizens of the Commonwealth to face the challenges of a new millennium. Access deficiencies, geographic and economic exclusion from the health care system, high prevalence of chronic diseases, inadequate programs for children's and women's health, insufficient utilization of preventive services (even to the limited extent of their availability), significant obesity, and clinical depression stand out as challenges facing Kentucky. These examples provide ample opportunity for policymakers to develop and implement programs with the potential to improve health in Kentucky.

Unfortunately, the trends discussed in this chapter are not all positive, nor are they easy to address positively. Powerful market and governmental forces for change *may* address some areas of need by design; other needs may be ameliorated as an economic side effect (improvement of prenatal care to decrease costs of prematurity, for example). Unfortunately, many areas of need may actually be *exacerbated* by trends already well under way.

Fortunately, trends *can* be altered. If we recognize them, analyze them sufficiently to understand their origin and their impact on the health of the population, and estimate the rate of change, we can intervene proactively to reverse or modify trends, and even initiate new goal-directed trends. In order to effect positive results from trend analysis, Kentucky must create a vision for health care, develop programs and action plans to move toward that vision and actively mitigate counterproductive or pernicious market and regulatory trends.

As we develop our vision of the future, goals for an effective health care system must include:

- Expanding access
- Enhancing quality
- Benefiting communities
- Managing costs

The health care system is experiencing unprecedented, accelerating change from cottage industry to big business, principally driven by market forces. Interacting with this enormous dollar-driven engine for change are technological, demographic, and consumer forces which combine to produce eight noteworthy trends that will broadly influence health care.

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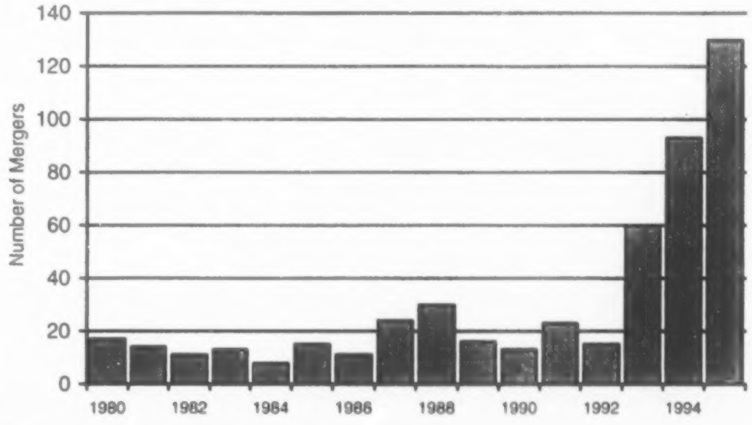
[*] The author extends grateful acknowledgment to Robert Slaton, Wayne Myers, Rice Leach, and Kim Burford for their assistance in development and preparation of this chapter.

Accelerated Provider Consolidation and Realignment

Components of this trend include hospitals, ambulatory services, home services, the public health sector, and payers. This trend will occur both vertically (i.e., alignment of hospitals, physicians, and payers) and horizontally (i.e., hospitals developing collaborative arrangements or equity mergers). Sophisticated communication and electronic information systems (clinical, demographic, and financial) are both the result of, and a *sine qua non* for, this consolidation. This trend is a response to the reduction of dollars flowing to providers with the intent of forcing increased efficiency.

FIGURE 6.1
Hospital Mergers in the United States



Source: American Hospital Association; Irving Levin Associates

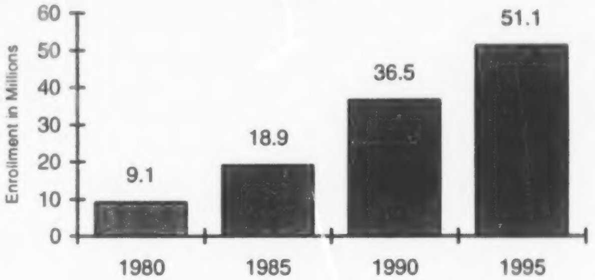
Negative impacts of this trend include excessive HMO profits, destructive competition for market share, and lack of trust among hospitals, physicians, payers, and regulatory entities. Access and quality may take a back seat to financial interest. However, in situations where trust can become operative, a positive impact of true collaboration can produce benefits to all parties in terms of access, quality, satisfaction, and cost. As integrated delivery systems develop, the public health sector will function as an integral component, diminishing the current artificial public/private dichotomy.

More Managed Care—in a Modified Form

We are beginning to see serious efforts to evaluate quality and satisfaction in the managed care industry emerge. The new horizon for managed care will likely involve a shift to effective quality-oriented care management, rather than simply forcing a decrease in the dollars flowing to providers. Capitation financing (driving risk closer to the provider level) is a mechanism for incentive structuring, cost management, and change which is arriving on the scene in Kentucky.

Managed care, as we have known it, has grown in response to demands for reduction of total dollars flowing to providers. The effort has produced limited success. On the other hand, the *evolving state* of managed care is a result of excesses in profit margins, CEO salaries, and restrictions on choice viewed to be egregious by the general public. This has directed more attention toward precisely targeted improvement of care and cost management.

FIGURE 6.2
HMO Enrollment in the United States
1980-1995



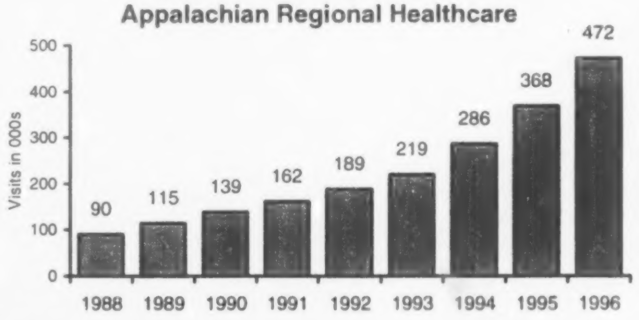
Source: Group Health Association of America, 1994; Emron, Inc., 1996

The emerging focus on true care management can positively affect outcomes, cost, and quality. More effective care management produces the opportunity to reduce medically unnecessary expenditures. Capitation, properly managed, can be a major component of a solution to the problem of managed care as we have known it. When incentives are placed on wellness rather than on procedures (a trend already well underway), the people of Kentucky will win. Because of the complex nature and significant public mission of health care, appropriate government oversight is needed to assure that the health care system is responsible and responsive to the needs of *all* Kentuckians.

Expanding Home and Ambulatory Services

The components of this trend include home services, ambulatory surgery, office care by physicians and other providers, partial hospitalization, alternative medicine, and care by nonphysicians. Also, technology allows dramatically increased sophistication of procedures that can be safely and effectively performed in home or office.

FIGURE 6.3
Home Services Visits, 1988-1996
Appalachian Regional Healthcare



Source: Appalachian Regional Healthcare Corporation

The reasons for this trend include cost management, technological improvements, experience as it is gained by the professions, and changing expectations on the part of providers and consumers alike.

Impacts of this trend include rapid growth of home services (which may be sufficiently robust to produce regulatory and market curbs on home service costs), conflict between physicians and hospitals, and the *risk* of poor quality. This trend has the *potential* to improve both cost and quality factors of health care. It can help create the continuum of care and effectively manage patient care and costs to optimize quality.

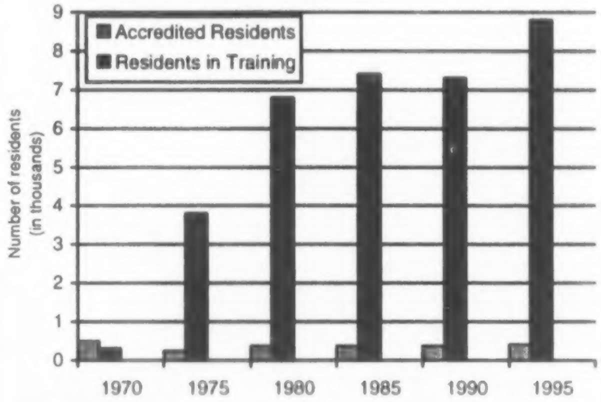
A Changing Health Care Workforce

Components of this trend include an increase in primary care disciplines, decreased volume of services provided by specialties (though specialty care is now being recognized as more cost-effective in *selected* circumstances), increased nonphysician providers, especially in primary care with advanced registered nurse practitioners and physician assistants, and a continuing search for ways to create incentives for the appropriate distribution of providers to match population-based need for all services.

Reasons for this trend include cost factors, quality improvement, the clear need to have more cost-effective providers at the right place at the right time, and the necessity to maintain skill levels of all providers by actively practicing at the appropriate level of their training. Both geographic and specialty maldistributions are significant problems. We see instances in which specialists perform generalist functions for which they are not trained, while their specialty skills tend to atrophy.

This trend has huge implications for health professions education. The educational segment of the health care industry must become responsive to demographic, market, and community needs, rather than continuing to be internally driven. Also, federal incentives for health professions education perversely impact geographic and specialty distribution of providers and require modification. Provider reimbursement will be adjusted by financial incentives to achieve desired goals. Successful achievement of the changes involved in this trend will produce increased quality, improved access, and decreased cost.

FIGURE 6.4
Accredited Residents and Residents in Training: 1970-1995



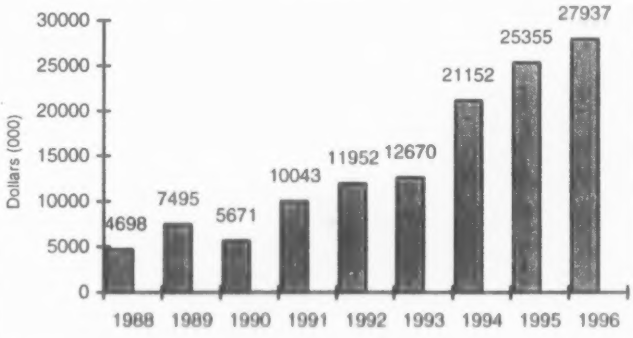
Source: American Board of Family Practice (ABFP)

A Weakening Health Care "Safety Net"

The components of this trend include increasing for-profit health care, proposed cutbacks at federal and state levels in Medicare and Medicaid, and the decline of cost-shifting as a resource for not-for-profit indigent care. Reasons for this trend are numerous. Policymakers sometimes depend on managed care and for-profit models that have succeeded by excluding the disenfranchised. In addition, beneficiaries of the health "safety net" often lack political clout. Additionally, health departments have become Medicaid dependent in many cases, and Medicaid cutbacks threaten their viability as a part of the "safety net."

This trend may lead to a crisis of monumental proportions. Some not-for-profit providers could be driven to extinction by their inability to fund their charity care burden. Health care must be perceived as systemic, social, and ethical, rather than piecemeal and for-profit. Meeting the societal responsibilities of health care to *all* requires finding a mechanism to assure access for the disenfranchised in the emerging market-oriented system. There is clearly a role for government in resolving this potentially catastrophic situation.

FIGURE 6.5
Charity Care, Appalachian Regional Healthcare Corporation, 1988-1996



Source: Appalachian Regional Healthcare Corporation

An Aging Population with New Health Care Demands

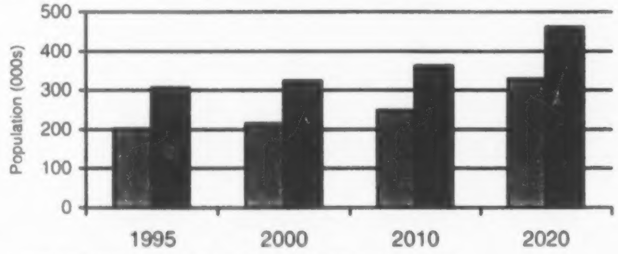


FIGURE 6.6
Estimates of the Older Population in Kentucky, 1995-2020
(Persons Age 65 and Older)

Source: Kentucky Population Research, University of Louisville

This trend clearly increases the demands for services in chronic illness and long-term care. Hence, there is a tremendous need to analyze our societal values relating to technology use and terminal care, and to define clearly the *outcomes* we truly desire. Only thus can the necessary outcomes be cost-effectively achieved. There is a growing move to restructure services to support living at home in preference to institutional alternatives.

This inexorable trend exerts pressure in *direct opposition* to market efforts to reduce the consumption of resources by the health care sector.

Infectious Disease on Rise

Components of this trend include AIDS, tuberculosis, antibiotic-resistant pathogens, and inevitably, yet unknown entities. The reasons for this trend include (1) the success of our health care technology, enabling the performance of many new procedures which put patients at tremendous risk, (2) population expansion, (3) behavioral choices, (4) increasing (and not always appropriate) use of antibiotics which produce newly resistant organisms, and (5) increasing frequency of immune deficiency from various therapeutic intervention. The expanding human population produces vast ecological changes (for example, species depletion, deforestation, animal population displacement) and disrupts environmental balances. We have *no* understanding of the long-term effects of these often irreversible events upon human infectious disease patterns.

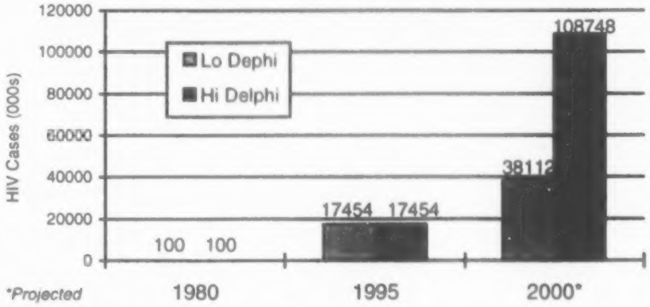


FIGURE 6.7
HIV Worldwide Annual Incidence With Low/High Projections for Year 2000

Source: AIDS in the World, Harvard University Press

We desperately need to develop understanding of what is happening to our ecosystem. Then, we must develop policies for enabling human populations to exist on a *healthy* planet. Chemicals, technology, and antibiotics must be properly used, and health care providers must be educated in these issues. We must examine the ecological impact of the human population objectively and make rational choices in the face of incalculable risk. We must look to new technology which may itself be able to produce solutions to this potentially disastrous trend.

New Attention to Consumer-Driven Resource Allocation

Components of this trend include: 1) recognition that consumer satisfaction is a critical aspect of quality care; 2) increased consumer input into health care decisionmaking; and 3) assurance of community benefit for decisions made by providers.

A major reason for the emergence of this trend is significant public reaction to excesses of the market, such as the previously mentioned profits, salaries, and consumer choice restrictions. Other reasons include cost reduction by government, a higher level of attention by providers to the bottom line than to beneficence in health care, and policy level failure to examine and deal with the ethical, quality, health, and community impacts of resource allocation decisions.

The major impact of this trend is the re-establishment of understanding on the part of both provider and consumer that health care is a community-level phenomenon. Appropriate community input can, over time, effectively rationalize the health care system. Knowledgeable and positively involved individuals and communities constitute the only real solution to the complex puzzle of health care as it undergoes a revolution in today's socioeconomic environment. Again, government has a role to play in assisting market-oriented systems to understand their responsibilities to patients, populations, communities, and "consumers."

Conclusion

Over the next four years, we can reasonably believe that economic forces, changing disease patterns, demographic changes, and increasing recognition of consumer and community interests will be the major factors driving change in health care. The ethics of health care, in this turbulent environment, are being aggressively challenged and require societal debate, understanding, and adaptation to favorably impact the change process. The view from the midst of the health care revolution suggests that *possibly* some more favorable trends lie ahead. To the extent that we understand and analyze trends and have a clear action plan for achieving our desired future state, we can work within current realities and *modify* existing trends for the benefit of the people of Kentucky. It will require thoughtful and extraordinary effort by policymakers and providers to reverse some established trends in order to achieve the goals of expanded access, enhanced quality, cost management, and community benefit.

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The Contours of Crime

Kentucky is a relatively low-crime state. In a state-by-state comparison conducted in 1996, Kentucky ranked as the 17th safest state. Kentucky's rate for the serious crimes of murder, forcible rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft was 3,449 per 100,000 people in 1995 compared to the national rate of 5,278 per 100,000. Some emerging trends in Kentucky include: an increasing focus on domestic violence; the increasing cost of the expanding prison population; youth crime; guns and self-protection; and community policing. Ultimately, the solutions for fighting crime lie in strengthening families, integrating neighborhoods, building communities, improving social institutions, and finding rewarding jobs for all who need them.

By John Curra
Eastern Kentucky University

Crime is a world problem, affecting nations, states, communities, and individuals across the globe.[1] It is woven deeply into the fabric of life in the United States.[2] Americans report that they are more fearful to walk alone at night than they once were, but they do feel safer at home than they once did.[3] The fear of crime varies with the perceived seriousness of a crime *and* the perceived risk of becoming a victim. Respondents in one study indicated that they are more afraid of strangers loitering near their home than they are of murder because they believe that murder, while serious, is rare. Fear is greatest when people believe a serious crime can actually happen to them.[4]

Cross-national comparisons show that the United States has a higher rate of serious violence than other industrialized democracies primarily because U.S. criminals are more likely to use handguns in the commission of their crimes.[5] The rates of minor violence and serious property crime are lower in the United States than in nations like England, Wales, Australia, and Canada.[6] If a worldwide crime wave exists, it has been caused primarily by increases in drug-related crimes.[7]

TABLE 7.1
Crime Clock Comparisons—Index Crimes in 1995
United States and Kentucky

Offense	United States	Kentucky
Murder	Every 24 minutes	Every 32.3 hours
Forcible Rape	Every 5 minutes	Every 6.9 hours
Robbery	Every 54 seconds	Every 2.2 hours
Aggravated Assault	Every 29 seconds	Every 1.1 hours
Motor Vehicle Theft	Every 21 seconds	Every 53.4 minutes
Burglary	Every 12 seconds	Every 18.6 minutes
Larceny-Theft	Every 4 seconds	Every 6.9 minutes

Source: FBI, Uniform Crime Report, 1995

Kentuckians are concerned about the problems of crime and drugs. In a recent Bluegrass State Poll (conducted from September 26 through October 1, 1996), 806 individuals, age 18 or older from the Louisville area, were asked what they thought was the most important problem facing the country. Seventeen percent picked drugs/substance abuse and 13 percent picked crime. Respondents in an earlier Bluegrass State Poll from September 1992 reported lower levels of concern: 5 percent picked drugs/substance abuse, and 1 percent picked crime.[8]

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[1] Union of International Associations. (1991). *Encyclopedia of world problems and human potential* (3rd ed.). Muenchen, Germany: K.G. Saur.

[2] Currie, E. (1985). *Confronting crime: an American challenge.* New York: Pantheon.

[3] Maguire, K., Pastore, A. (Eds.). (1995). *Sourcebook of criminal justice statistics—1994.* Washington, DC: USGPO, p. 167.

[4] Warr, M., Stafford, M. (1983, June). Fear of victimization: a look at the proximate causes. *Social Forces,* 61, 1033-1043.

[5] Fingerhut, L., Kleinman, J. (1990, June). International and interstate comparisons of homicide among young males. *Journal of the American Medical Association,* 26.

[6] Lynch, J. (1995). Crime in international perspective. In J. Wilson, J. Petersilia (Eds.), *Crime* (p. 21). San Francisco, CA: ICS Press.

[7] United Nations. (1992). Trends in crime and criminal justice, 1970-1985. In *Context of Socio-Economic Change.* New York: Author.

When it comes to the crime problem, no simple answers or quick fixes are to be found. Currie reminds us that "there are no magic buttons to push, no program waiting just around the corner to reform the courts or strengthen the police or organize the neighborhood that will make criminal violence disappear tomorrow."[9] We can make our homes, schools, and communities safer and better than they are, *but* we are in for the long haul. Long-range planning is essential because world problems require world-class solutions, the kind that only come from deliberate efforts to reach attainable goals.

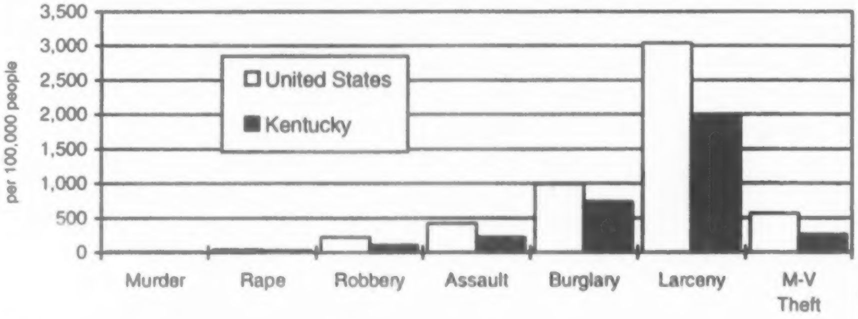
Crime Trends

The 1968 Kentucky General Assembly enacted a uniform crime reporting law, mandating the collection of information on crime in the Commonwealth. *Crime in Kentucky 1995* is the 26th annual report. It informs readers that increases or decreases in crime rates can be caused by a number of factors like the methods of tabulating and reporting used by law enforcement agencies and differences in citizens' propensity to report crimes to police.[10] Places with high crime rates may simply be more efficient at finding and reporting illegal behavior, or changes in reporting procedures can themselves influence changes in crime rates. For example, from 1994 to 1995, aggravated assault in Kentucky showed a 52.42 percent *decrease*. The reason is that less serious aggravated assaults were downgraded to simple assaults and removed from the list of most serious crimes.[11]

In a state-by-state analysis of the 50 U.S. states, the dangerousness of each one was determined by using 14 separate factors like crime rates, changes in crime rates, changes in violent crime rates, juvenile crime statistics, data on corrections, expenditures for police protection, and the number of full-time police officers. In 1996, Nevada was classified as the most dangerous state in the nation (replacing Louisiana). Kentucky was ranked 34th, a situation in which the higher the score (up to 50), the safer the state.[12]

The Kentucky rate in 1995 for serious crimes of murder, forcible rape, robbery, aggravated assault, burglary, larceny, and motor vehicle theft—the Index Crimes—was 3,449 per 100,000

FIGURE 7.1
United States and Kentucky Crime Rates, 1995



Source: FBI, Uniform Crime Report

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[8] Garrett, R. (1996, October 13). Crime, drugs replace work as top concern. *The Courier-Journal*, p. A1.
[9] Currie. *Confronting crime*. 17-18.
[10] Kentucky State Police. (1996). *Crime in Kentucky, 1995*. (Crime Report). Frankfort, KY: Author, p. 4.
[11] Kentucky State Police. *Crime in Kentucky, 1995*.
[12] Morgan, K., Morgan, S., Quitno, N. (1996). *Crime state rankings 1996: crime in the 50 United States* (3rd. ed.). Lawrence, KS: Morgan Quitno Press, p. iv.

people.[13] This was substantially lower than the nation as a whole, which had a serious crime rate in 1995 of 5,278 per 100,000 people.[14] Kentucky's rate was also lower than most other states. Only five states had lower rates of serious crime than Kentucky: Maine, New Hampshire, North Dakota, South Dakota, and West Virginia.

Kentucky's rates of both violent crime and property crime compare quite favorably with those rates found in other parts of the country. The rate of violent crime for a region is a composite number that covers murder, forcible rape, robbery, and aggravated assault. Kentucky's violent crime rate in 1995 was 365 per 100,000 people, and only 15 states had lower rates of violent crime (Hawaii, Idaho, Iowa, Minnesota, Maine, Montana, New Hampshire, North Dakota, South Dakota, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming). Kentucky's property crime rate in 1995, which combines information on burglary, larceny-theft, and motor vehicle theft, was 2,987 per 100,000 people. Only five states had lower rates of property crime (New Hampshire, Pennsylvania, North Dakota, South Dakota, and West Virginia).

Not all people in the Commonwealth, nor in the nation as a whole, have an equal risk of being victimized by crime. For approximately 20 years, an annual survey of victims of crime has been conducted in the United States. This survey measures the number of rapes, robberies, assaults, and thefts that Americans experience. Since their peak in the early 1980s, victimizations have declined over time.[15] Males, young persons,[16] blacks,[17] Hispanics,[18] residents of central cities, and the poor tend to have higher rates of victimization. Rates of victimization tend to decline with age. However, elderly victims are the most likely to be traumatized by their experiences, partly because they more physically vulnerable, but also because they are more likely to face assailants who are strangers and to be victimized in or near their own homes.[19]

Population characteristics and changes in them over time influence crime rates. Seventy-five million babies, the Baby Boom generation, were born in the United States from 1946 to 1964, 70 percent more people than were born during the previous two decades. By 1994, the Baby-Boom generation made up approximately one third of the U.S. population.[20] Increases in U.S. crime rates of the 1960s were caused in part by the Baby Boomers entering the crime-prone years—14 to 24—and decreases in U.S. crime rates in the 1980s were caused in part by Baby Boomers leaving the crime-prone years behind.[21]

Some of the demographic changes occurring in the nation as a whole—population growth, urbanization, and increases in population diversity—are not found to the same degree in Kentucky. Kentucky's population growth in the 1980s was sluggish, increasing only 0.7 percent throughout the decade (compared to a national increase of 8.7 percent). This stagnancy was caused in part by an out-migration of individuals in their early 20s.[22] A reversal of this pattern of out-migration is underway, and predictions are that Kentucky will experience moderate population growth in the years ahead, an increase of 7 percent, or 240,000 persons, from 1990 to 2020.[23] Despite some population increase, Kentucky will continue to be primarily a rural state, and it will lack substantial racial, ethnic, and cultural diversity.[24] In 1990, 92 percent of Kentucky's population was classified as white, 7 percent as black, and the remainder from other categories

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[13] Kentucky State Police. *Crime in Kentucky, 1995.*

[14] Federal Bureau of Investigation (FBI). (1996). *Crime in the United States, 1995.* Washington, DC: USGPO, p. 58.

[15] Bureau of Justice Statistics. (1994). *Criminal victimization in the United States: 1973-92 trends.* Washington, DC: USGPO.

[16] Bureau of Justice Statistics. (1991). *Teenage victims: a national crime survey report.* Washington, DC: USGPO, p. 1.

[17] Bureau of Justice Statistics. (1994). *Young black male victims.* Washington, DC: USGPO.

[18] Bureau of Justice Statistics. (1990). *Hispanic victims.* Washington, DC: USGPO.

[19] Bureau of Justice Statistics. (1994). *Elderly crime victims.* Washington, DC: USGPO.

[20] U.S. Bureau of the Census. (1996). *65+ in the United States.* (Current Population Reports, Special Studies, P23-190). Washington, DC: USGPO, pp. 2-1, 2-2.

[21] Walker, S. (1994). *Sense and nonsense about crime and drugs* (3rd ed.). Belmont, CA: Wadsworth, p. 87.

[22] Smith-Mello, M., Schirmer, P. (1994). *The context of change: trends, innovations and forces affecting Kentucky's future.* Frankfort, KY: Kentucky Long-Term Policy Research Center, pp. 2-9.

[23] Price, M., Sawyer, T., Scobee, M. (1995). *How many Kentuckians: population forecasts 1995-2020.* Louisville, KY: Kentucky State Data Center, p.1.

[24] Smith-Mello, Schirmer. *The context of change,* 4-6.

(American Indian, Eskimo, Aleut, Asian, Pacific Islander).[25] The homogeneity of the population, Kentucky's rural nature, and the gradual nature of its population growth all have a dampening effect on crime rates. Even Kentucky's major urban areas—Lexington and Louisville—are relatively safe. Based on the average rankings of the 1993 rates in six categories—violent crime, property crime, murder, rape, aggravated assault, and robbery—Lexington was ranked as the 17th safest city in the United States and Louisville as the 20th.[26]

Economic well-being of a region is also an important variable in understanding its crime rates. Human nature does not develop in a vacuum. The experiences people have in institutions, homes, and communities shape them as individuals. The industrial revolution attracted people to U.S. cities who were looking for employment, decent wages, excitement, and new opportunities for growth and personal fulfillment.[27] Instead, what many of them found was poverty, inequality, and restricted or nonexistent mobility. Orderly and secure communities became more difficult to maintain in the face of the social changes that were creating economic insecurity, social impoverishment, and communal disruption for some while visibly enriching others.[28] Some people became angry, frustrated, and aggressive, and they drifted away from the constraining influence of central institutions. Economically deprived groups are heavily involved in serious criminal offenses, especially violent street crime.[29]

A central challenge for governmental agencies in Kentucky is to find ways to raise citizens' incomes enough to promote greater prosperity and social equality.

Poverty is higher in the South than in the Midwest, West, and Northeast, and it is quite persistent. Kentucky's poverty rate in 1989 was 19.0—almost one person in five lived in poverty—and the Commonwealth's rank was 46, which meant that only five states had higher rates of poverty.[30] Things were not much different 10 years earlier in 1979 when Kentucky's poverty rate was 17.6, and its rank was 45. Kentucky's poverty rate in 1969 was 22.9, and its rank was 46.[31] In 1993, 20.4 percent of Kentuckians were classified as living in poverty.[32] Poverty does not inevitably cause crime, and a great deal depends on how income is shared and how the poor view their lot and their relationship to the nonpoor. Crime flourishes when valued resources are unfairly divided, especially if the contrast between the rich and the poor is glaring.[33]

A central challenge for governmental agencies in Kentucky is to find ways to raise citizens' incomes enough to promote greater prosperity and social equality.[34] Harsh inequality is unjust, damaging to human growth, and destructive of social order. Kentuckians in need require both incentives and supports to make it possible for them to prepare for, find, and successfully hold jobs that pay wages and salaries that enable a sense of accomplishment that makes law-abiding behavior and social conformity valuable and worthwhile.

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[25] Cabinet for Economic Development. (1996). *Kentucky deskbook of economic statistics.* Frankfort, KY: Author., pp. 42-43.

[26] Morgan, K., Morgan, S., Quitno, N. (Eds.). (1995). *City crime rankings: crime in metropolitan America.* (xi). Lawrence, KS: Morgan Quitno.

[27] Sykes, G. (1980). *The future of crime.* Washington, DC: USGPO, p. 11.

[28] Currie E. (1989, March). Confronting crime: looking toward the twenty-first century. *Justice Quarterly,* 6, 18.

[29] Hagan, J., Peterson, R. (Eds.). (1995). *Crime and inequality.* Stanford, CA: Stanford University Press.

[30] See M. Fordham and D. Jacovitch in this volume for a detailed discussion of poverty in Kentucky.

[31] Bureau of the Census. (1993, August). Poverty in the United States—changes between the censuses. *Statistical Brief.* Washington, DC: USGPO.

[32] Cabinet for Economic Development. *Kentucky deskbook of economic statistics,* 3.

[33] See A. Chandra in this volume for a detailed discussion on income inequality.

[34] Sebastian, B. (1996, March). *Scanning Kentucky 1995: the year in review.* Frankfort, KY: Kentucky Long-Term Policy Research Center, 31.

Crime Trends and Public Policy

The Violent Crime Control and Law Enforcement Act of 1994—Public Law 103-322—was enacted to control and prevent crime in the United States.[35] Because of the crime-control strategies it mandates, this law will serve as a foundation for many of the crime-related issues that will be at the top of the Kentucky agenda in the years ahead: domestic violence, the role of prisons, youth crime, guns, and community policing.[36]

Domestic Violence in Kentucky. Domestic violence includes any of the following crimes when committed by one family member/partner against another: homicide, kidnapping, sex offenses, stalking, assault, and terroristic threatening.[37] In fiscal year (FY) 1995, the Department for Social Services received 21,089 spouse abuse reports.[38]

A study of 510 Kentucky women who were battered by their partners shows that battered women often find themselves trapped in abusive relationships, not because they suffer from learned helplessness or battered-woman syndrome, but because of factors like poverty, low educational achievement, the absence of child care facilities, and the unavailability or inaccessibility of safe, affordable, alternate housing.[39] Battered women are geographically and socially isolated, economically dependent, and subordinated by a cultural tradition of patriarchy in which a man's home is viewed as his castle, and what he does there is viewed as his own business.[40] Those women who do manage to leave abusive relationships usually return and continue to be abused. If abused women find separate housing and their own jobs, they are usually successful in stopping their abuse.[41] Victims of abuse must be supported in their movement toward greater self-reliance.[42]

In principle, police could be powerful allies of abused women. However, some police officers are unwilling to intervene in domestic disputes and reluctant to arrest abusive partners.[43] Battered women who have summoned police for help strongly believe that Kentucky State Police officers do a far better job of handling domestic violence calls than do local police, probably because state police are more detached from rural communities and less likely to be compromised by familiarity with the abuser.[44]

The Department for Social Services in the Cabinet for Families and Children is legally required to investigate all reported cases of child abuse, neglect, and dependency and to protect children from harm. In FY 1995, 63,313 children were reported as abused (physical and/or sexual), neglected, or dependent. Most of these children were under age 10 (71.65 percent), and just about half were female (50.62 percent) and half were male (49.28 percent).[45]

Of particular concern to the Attorney General's Office is the sexual abuse of children. Thirty new victim advocate positions have been established throughout Kentucky under a $1.6 million grant program. These victim advocates work in county and commonwealth attorneys' offices, rape crisis centers, and mental health agencies. Acting on proposals drafted by the Attorney General's Task Force on Child Sexual Abuse, the 1994 General Assembly signed several bills into law, like SB 43, which creates a registry of convicted sexual offenders, and HB 96, which prohibits shock probation for serious sexual offenders.[46] Kentucky has almost fully implemented a statewide victim-notification system in which victims of crime, law-enforcement personnel, and others who need to know are informed 72 hours in advance about the release of prisoners.[47]

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[35] 103d Congress. (1994, September 13). *Violent Crime Control and Law Enforcement Act of 1994*. Public Law 103-322.

[36] Kentucky Justice Cabinet. (Various Dates). *Project Briefs*. Frankfort, KY: Author.

[37] Attorney General's Task Force on Domestic Violence Crime. (1993, October). *Domestic violence fatalities—a statistical report*. Frankfort, KY: Office of the Attorney General.

[38] Department for Social Services. (1995). *Profile on Adult Abuse, Fiscal Year 1995*. Frankfort, KY: Author, 2.

[39] Websdale, N., Johnson, B. (forthcoming). Reducing domestic violence: the role of structural approaches. *Social Justice*.

[40] Websdale, N. (1995). Rural woman abuse: the voices of Kentucky women. In *Violence Against Women* (pp. 309-338). Thousand Oaks, CA: Sage.

[41] Websdale and Johnson. Reducing domestic violence.

[42] Valum, M. (1995, October). How to help someone you love. *Domestic Violence Prevention*, 1, 1-4.

[43] Websdale, N. (1995). An ethnographic assessment of the policing of domestic violence in rural eastern Kentucky. *Social Justice*, 22, 111.

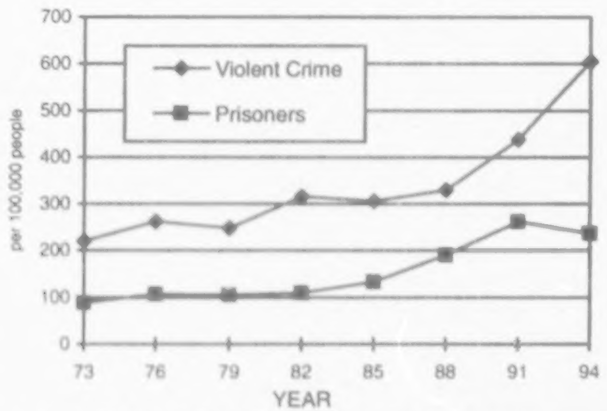
[44] Websdale, N. and Johnson, B. (1996, December). The policing of domestic violence in rural and urban areas: listening to voices of battered women. *Policing and Society*, 4, 1-18.

[45] Department for Social Services. (1996) *Profile on child abuse and neglect, fiscal year 1995, and trend charts, fiscal years 1988-1995*. Frankfort, KY: Author.

In the first report of its kind, the Attorney General's Office and the Prosecutors' Advisory Council provided data on the sexual abuse of children in Kentucky. During FY 1995, 1,588 cases of child sexual abuse were opened. Fifty-two percent (828) of these cases were sent to Circuit Court, and 48 percent (760) went to District Court. Of the cases that had been closed in Circuit Court at the time of the report, 75 percent resulted in a guilty verdict on at least one charge; of the closed cases in District Court at the time of the report, 71 percent resulted in an indictment or guilty verdict on a least one charge.[48]

Soaring Prison Populations. For over two decades, starting in 1973, prisons in the United States have been experiencing a tremendous expansion, and the United States now has one of the highest incarceration rates in the entire world.[49] Many things contribute to soaring prison populations—the war on drugs, the Baby Boom, mandatory sentencing laws, longer sentences, and parole boards keeping felons behind bars longer. However, the major factor fueling the increase in prison populations is the predilection to send convicted felons to prison.[50] Forty-seven percent of state prisoners in the United States in 1994 were being held for violent crimes, 23 percent for property crimes, and 22 percent for drugs. Public-order offenses and miscellaneous crimes made up the rest.[51]

FIGURE 7.3
Violent Crime and Prisoner Population



Source: FBI, Uniform Crime Reports; Sourcebook of Criminal Justice Statistics, 1994; and Correctional Populations in the United States, 1994

For most of the 1980s in Kentucky, spending on public safety—corrections and the state police—was the fastest growing of the major budget items, with most of the increased funding going to the Department of Corrections. In FY 1976, the state police received more money than corrections. Now the Department of Corrections receives more than twice as much money as state police agencies receive, even though the Kentucky State Police started receiving a considerable part of its funding from the road fund after FY 1988. These long-term shifts in funding priorities are caused more by changes in sentencing and judicial policies than by rising crime rates.[52] The long-term projections are that spending on police and corrections will increase to 6.5 percent of the general fund by the beginning of the next century.[53]

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[46] Office of the Attorney General. (1995). *Biennial Report 1993-1995*. Frankfort, KY: Author, 5-6.

[47] Kentucky Department of Corrections. (1995). *In Review 1994-1995*. Frankfort, KY: Author, 30.

[48] Prosecutors Advisory Council. (1996, May 31). *Child sexual abuse data collection*. Frankfort, KY: Office of the Attorney General, 3.

[49] Horn, P. (1991). Caging America. *Dollars and Sense*, 169, 12-15; 22.

[50] Langan, P.A. (1991, March 29). America's soaring prison population. *Science*, 251, 1568-1573.

[51] Brown, J., Gilliard, D., Snell, T., Stephan, J., Wilson, D.J. (1996). *Correctional populations in the United States, 1994*. Washington, DC: USGPO, 11.

[52] Schirmer, P., Childress, M.T., Nett, C.C. (1996). *$5.8 billion and change*. Frankfort, KY: Kentucky Long-Term Policy Research Center, 13-14.

[53] Schirmer, Childress, and Nett. (1996, April). *Research Brief*.

The evidence is not particularly persuasive that increases in either the use of prison or the severity of sentences will have much impact on the crime rate. In order for the threat of prison to stop criminal activities, the probability of going to prison following the commission of a crime would have to be higher than it is now. Law enforcement agencies across the nation only cleared 21 percent of serious crimes by arrest in 1995.[54] Because the chances of being arrested are low, making prison more forbidding by increasing the length or severity of sentences will have little impact on fluctuations in the crime rate. If prisons have any deterrent effect at all, it is due to increases in the certainty of punishment, not its severity.[55]

Prison populations in southern states have grown the fastest.[56] As of January 3, 1995, Kentucky had 10,888 inmates housed in a variety of institutions across the state—maximum, medium, minimum security; private prisons; a boot camp; community service centers; and others. Sixty-four percent of the inmates are white and 36 percent are black. Most inmates are incarcerated for violent crimes (39 percent), followed by property crimes (27 percent), drug crimes (18 percent), sex crimes (13 percent), and miscellaneous crimes (3 percent). The median age of inmates is 32 years, and practically all inmates are male (94 percent).[57] The average cost to incarcerate a Kentucky inmate in FY 1994-1995 was $37.30 per day or $13,613.30 a year. Costs of incarceration were highest in the Kentucky State Reformatory and lowest in the Eastern Kentucky Correctional Complex.[58]

It is likely a correctional establishment will always exist, but it is also very likely that its nature and function will change over time. Penal practices develop from the connections between political, social, and economic factors in a community, and many changes within the correctional establishment are traceable to factors outside prison. Decriminalization of some current offenses, the discovery of an effective drug-treatment program, or a reduction in criminal violence would significantly reduce future prison populations. The rising costs of imprisonment have led to a search for sanctions that are still punishing but that can be used in place of prisons.[59]

Youth Crime in Kentucky. In 1995, 8,612 people under 18 were arrested in Kentucky for the commission of murder, forcible rape, robbery, aggravated assault, burglary, larceny, and auto theft. An additional 13,283 individuals under 18 were arrested for crimes like arson, vandalism, liquor law violations, drunkenness, and disorderly conduct.[60] Because of changes in the way the Commonwealth now records arrests (based on the number of *persons* arrested), *Crime in Kentucky* cannot be used at this time to make long-term comparisons. However, the FBI's 1995 Uniform Crime Report indicates that nationwide, from 1991 to 1995, juvenile arrests rose 20 percent (while adult arrests increased 2 percent).[61]

When young people are arrested, especially for serious crimes, it seems particularly tragic. However, the situation may not be as grim as it appears. Statistics on arrest are not particularly good indicators of criminal involvement, especially for minors. Juveniles are overrepresented because they often commit less sophisticated crimes (such as vandalism and larceny), and they are usually easier to find and arrest than adults.[62] One thing is true, juvenile arrests are still a relatively small percentage of all arrests, both in the nation and in Kentucky. Nationwide, 18.7 percent of the arrests for violent crimes involved people under 18 (1995),[63]and in Kentucky, 13.87 percent of those people arrested for violent crimes were under 18 (1995).[64] Self-report studies of juveniles indicate that nearly all juveniles break the law some time, but only a small percentage engage in persistent and serious crime.[65]

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[54] FBI. (1996). *Crime in the United States 1995*. Washington, DC: USGPO, 197.

[55] Blumstein, A. (1995). Prisons. In J.Q. Wilson and J. Petersilia (Eds.), *Crime* (pp. 387-419). San Francisco, CA: ICS Press.

[56] Bureau of Justice Statistics. (1995, August). *Prisoners in 1994*. Washington, DC: USGPO.

[57] Kentucky Department of Corrections. (1995). *Profile: Institutional Population*. Frankfort, KY: Author, 1-3.

[58] Kentucky Department of Corrections. (1995). *In Review 1994-1995*. Frankfort, KY: Justice Cabinet, 37.

[59] Zvekic, U. (Ed.). (1994). *Alternatives to imprisonment in comparative perspective*. Chicago: Nelson-Hall.

[60] Kentucky State Police. *Crime in Kentucky 1995*, 44.

[61] FBI. *Crime in the United States 1995*, 207.

[62] Albanese, J. (1993). *Dealing with delinquency* (2nd ed.). Chicago: Nelson-Hall.

[63] FBI. *Crime in the United States 1995*, 218.

[64] FBI. *Crime in the United States 1995*, 268.

House Bill 117 passed the Kentucky House of Representatives with no dissenting votes (96 RS BR 889).[66] About two weeks later the bill unanimously passed the Senate. It was enacted on Monday, April 1, 1996. The bill presents a get-tough approach to juvenile crime. It mandates severe penalties for serious crimes and makes it easier for juveniles to be tried as adults. Parents can be forced to pay court costs and restitution for their children's crimes, and responsibility for youth crime shifted to a Department of Juvenile Justice, established to identify youth at risk, initiate programs of rehabilitation, develop detention facilities, and prevent juvenile crime. During FY 1994, 12,480 juveniles were admitted to detention centers, holding facilities, and county jails in Kentucky. Eighty-eight percent of them were categorized as public offenders, and the remainder were either status offenders (6.96 percent) or traffic offenders (4.75 percent).[67]

TABLE 7.2

Arrests of Kentuckians Under 18 Years of Age (percentage of total arrests)

Offense	1985	1990	1995
Murder	9.7	5.3	19.4
Forcible Rape	10.2	10.8	15.6
Robbery	14.9	15.3	26.3
Aggravated Assault	7.1	6.4	11.2
Burglary	35.3	27.8	29.9
Larceny	27.9	24.3	33.2
Motor Vehicle Theft	41.1	34.3	41.7
Arson	29.4	38.2	53.6
Violence	8.7	7.6	13.9
Property	30.4	26.2	33.6
Index Crimes	25.3	19.3	26.7

Source: Data are compiled from FBI's Uniform Crime Reports.

The search is on to find affordable, effective alternatives to prison for juvenile offenders. One controversial policy is the enactment of laws that hold parents legally responsible for the crimes and delinquencies of their children. Depending on the situation, parents can be counseled, fined, or jailed for the trespasses of their youngsters.[68] Boot camps have become another popular item on many delinquency-prevention agendas. Boot camps generally involve a short period of incarceration for first-time offenders convicted of nonviolent crimes. Camp inmates follow a rigid schedule of physical training, work, and life skills development. Postincarceration aftercare services are supposed to be coordinated with boot camp experiences.[69]

Kentucky's shock incarceration boot camp, as of January 3, 1995, held 49 offenders—55 percent of the inmates were black and 45 percent were white. Most were confined for property offenses (43 percent), followed by drugs (37 percent), and violent offenses (10 percent). The median age of inmates was 23.[70] Kentucky's boot camp consists of a four-month program of intense supervision and military drill. A typical day starts at 4:30 a.m. and ends at 9:30 p.m., during which time inmates receive educational instruction, substance abuse information, life skills training, and information about victims of crime. The program seems effective—83 percent make parole—and those who complete the program but then break the law again are almost always guilty of a technical violation, usually a positive urine test.

The jury is still out on the effectiveness of boot camps.[71] No one has shown that boot camps can consistently turn serious lawbreakers away from crime. Well-run boot camps can teach self-reliance and some valuable life skills, while boot camps that demean and abuse juveniles to scare them straight may do more harm than good. Troubled youth may get the idea that abuse—verbal and physical—is perfectly acceptable. If it were not, why would their guards use it so often? Boot camps may change some youth, but no one knows for how long or in what direction.[72] A consensus is developing that intensive programs outside institutions help juvenile delinquents more than incarceration in prisons and/or boot camps.[73] Research suggests that youth who are imprisoned are more likely to continue in their criminality after release than youth who are given alternate sanctions.[74]

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[65] Albanese. *Dealing With Delinquency*, 29.

[66] House of Representatives. (1996, January 2). House Bill No. 117. *In House.*

[67] Justice Cabinet. *In Review 1994-1995*, 47-48.

[68] Smolowe, J. (1996, May 20). Parenting on trial. *Time*, 50.

[69] Violent Crime Control and Law Enforcement Act of 1994, p. 1818.

[70] Department of Corrections. *Profile institutional population*, 64-66.

[71] Walker. *Sense and nonsense about crime and drugs*, 223-225.

Youth have special needs that require more than a uniform get-tough approach. They need to see some value in lawful behavior, and they need to develop a strong sense of self-worth. When adolescents carry weapons, steal from others, act violently, use and deal drugs, and join gangs, they do these things because they see little value in conventional behavior.[75] Some juveniles may reach the point where they are willing to do practically anything to practically anybody. Their lives are aimless, their bonds to society are weak, and their stake in conformity is absent. A two-year study by the RAND Corporation discovered preventive measures to encourage high-risk youth to finish school and to teach more effective parenting skills to the parents of violent youth are more successful and more economical than incarceration in reducing youth crime.[76]

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Guns and Self-Protection. On Friday, March 29, 1996, Governor Paul Patton signed House Bill 40, the concealed weapons bill, into law. Its purpose is to give citizens more self-protection against predatory individuals. Citizens 21 years of age or older, who meet certain criteria, and who buy a permit from the state to carry a concealed weapon, may now carry a hidden firearm. Some restrictions apply—many businesses, universities, and schools prohibit the carrying of weapons by anyone other than law enforcement officials—and applicants must take a course of gun instruction to qualify for a permit. The ink was barely dry on the bill when just the kind of thing that made critics nervous came to pass. An employee of McDonald's Restaurant in Richmond was washing the outer wall of the eatery. He leaned over to rinse his scrub brush, and a .22-caliber pistol fell from his shirt pocket, hit the ground, discharged, and shot him in the throat.[77] He survived the wound, but things could have turned out far worse. The man could have been carrying a more potent weapon, or someone could have been killed.

Will concealed weapons give Kentuckians protection against crime? It is still too early to tell, but research shows that a gun in the home is far more likely to be used to kill a member of that household than it is to be used to kill an intruder in self-defense. One study of 388 home homicides, half of which involved firearms, in the Memphis, Seattle and Cleveland areas, between 1987 and 1992 found that 51 percent of the killings took place in the context of a romantic triangle or argument, and 77 percent of the victims were killed by a relative or acquaintance. The authors concluded that firearms are too dangerous to keep in the home, even for purposes of protection.[78] However, this study only showed that guns in the home increase the levels of violence. It did not show that guns in the home are ineffective as a form of self-protection.

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[72] Bentayou, F. (1995). *How should America deal with young offenders?* San Diego, CA: Greenhaven Press, 212-219.

[73] Currie, E. (1994, January 31). What's wrong with the crime bill. *The Nation*, 118.

[74] Travis, J. (1996, February). Alternative sanctions in Germany. *National Institute of Justice Research Preview*. Washington, DC: USGPO.

[75] Wright, J., Sheley, J. (1995). Society should reduce young people's need for guns. *How should America deal with young offenders?* San Diego, CA: Greenhaven, 192-193.

[76] Greenwood, P.W. et al. (1996). *Diverting children from a life of crime: measuring costs and benefits*. Santa Monica, CA: RAND.

[77] Delgado, V. (1995, March 29). Man accidentally shoots self in throat at work with alleged concealed weapon. *The Richmond Register*, A1; A2.

Most gun owners do report that guns make them feel safe from harm, and they do believe that their guns will help protect them from criminals.[79] Apparently, these owners are not kidding themselves. Gun-armed defenders usually face a criminal who is unarmed, so they do manage to deter a crime, often without firing a shot.[80] We may provisionally conclude that the defensive use of guns by civilians can keep them from becoming victims of violent crime.

The demonstration that the possession of a weapon averts violent crime does not prove that people ought to own one. At some point, individuals must deposit their concealed weapons somewhere, and it is at this point that even the most responsible owner loses some control over his or her weapon. Research by David Brent and his colleagues indicates that firearms in the home increase the chances of a troubled adolescent taking his or her own life, no matter how carefully the owners store their weapons.[81]

Kentuckians who carry concealed weapons will fear crime and criminals less, we may predict. Some will use their weapons successfully to protect others, themselves, and their possessions from predatory individuals. However, the number of gun-related accidents and suicides should increase if substantial numbers of people carry guns and store them in their homes.

Community Policing. Policing used to be more proactive and community-oriented. Constables walked the beat and knew the comings and goings of residents of the community. They worked to prevent crime and eliminate criminogenic conditions by making sure that doors were locked, that suspicious individuals were questioned, and that residents were taking care of themselves. One reason for the shift from foot patrols to cruisers was budgetary—officers could cover more territory if they were in motor vehicles. Another reason was that foot patrols invited corruption—they made it easier for police officers to accept bribes or solicit payoffs.[82]

Americans do have confidence in the police. A Gallup poll from 1995 discovered that 88 percent of the sample had a "great deal/quite a lot," or "some" confidence in the police.[83] The confidence in police was higher than the confidence in church or organized religion, the U.S. Presidency, the U.S. Supreme Court, Congress, or the criminal justice system.[84] The only factor that seemed to diminish confidence levels was minority status—nonwhites were less inclined to trust police.[85]

Does community policing reduce crime rates? Does it improve citizens' feelings of safety and security? Most research indicates that community policing has a minor influence on crime levels in an area, but it does seem to calm citizens' fears in communities plagued by crime.[86] When police do make a difference in crime rates, it is usually because they have attacked some risk factors for crime, like the illegal ownership of weapons.[87] The resurgence of an interest in community policing implicitly acknowledges that the quality of life in communities must improve before crime will decrease.

Community policing is becoming more popular all across the nation, but it has always been an integral part of police work in Kentucky. Many police officers in the Commonwealth work in towns and small cities where a sense of community is already present, and the officers are familiar with the residents, their problems, and the identity of troublemakers. However, if community policing is carried too far, it can become oppressive. Community residents may wish to be left alone to deal with their own problems, and they may have a generalized suspicion of police.[88]

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[78] Kellerman, A., et al. (1993, October 7). Gun ownership as a risk factor for homicide in the home. *The New England Journal of Medicine*, 1084-1091.

[79] Kleck, G. (1991). *Point blank: guns and violence in America*. New York: Aldine de Gruyter, 120.

[80] Kleck. *Point Blank*, 124.

[81] Brent, D., et al. (1991, December 4). The presence and accessibility of firearms in the homes of adolescent suicides: a case control study. *Journal of the American Medical Association*, 226, 2989-2995.

[82] Worsnop, R. (1991, September 6). Police brutality. *The CQ Researcher*, 1, 633-656.

[83] Maguire and Pastore. *Sourcebook*, 147.

[84] Maguire and Pastore, *Sourcebook*, 145.

[85] Maguire and Pastore, *Sourcebook*, 147.

[86] Walker, S. (1992). *The police in America*. New York: McGraw-Hill.

[87] Sherman, L.W. (1995). The police. In J.Q. Wilson and J. Petersilia (Eds.), *Crime* (pp. 327-348). San Francisco, CA: ICS Press.

At some distant point, police may be replaced by physicians, theologians, psychologists, social workers, or urban planners. However, for now the police will carry the burden for a society that either cannot or will not change, and they will remain an essential part of the U.S. crime-fighting apparatus. Despite the many changes in police activities, organization, and technology, police generally continue to do what they have always done. They try to insulate themselves from too much interference from superiors; they try to protect other officers; they try to do whatever they believe is proper and just in surroundings that have the potential for great personal injury; they try to make arrests and provide services when they think it will do some good; and they try to uphold the peace the best they can.[89] These features of police activity are likely to remain constant into the foreseeable future.

Crime and Punishment in the 21st Century

Physicist Hans Bethe insisted that prediction is very hazardous, especially when it concerns the future.[90] We can appreciate the truth of his assertion by considering one effort from the last century to gaze into the future. In 1893, the American Press Association (APA), a ready-print syndicate based in New York City, commissioned 74 distinguished Americans to prepare short essays in response to questions about how things would look in the United States 100 years in the future, in 1993.[91]

These futurists of the 1890s believed that by 1993, technology would have solved all of society's ills, and human nature would have changed for the better. While some predictions were correct, most were not. John Habberton, editor and author, predicted the disappearance of insurance companies (there will be no house fires because brick, stone, and iron will replace wood houses) and the disuse of stimulants (because of proper cooking and better living habits). He insisted all marriages would be happy because men and women unfit for marriage would be executed. The journalist Junius Henri Browne believed that the law would become so simple the number of attorneys would be significantly reduced. He also believed criminals would be less severely punished and that their numbers would decrease because of educational advancements. The forecasters' predictions were incorrect primarily because human nature is not quite as pliable as they seemed to think, and technological improvements will transform human relationships only so much.

As we move into the next century, changes in society will create new crimes, and the criminal justice system will be expected to respond to them.[92] The rates of most street crimes will probably go down, and the rates of white-collar crimes will probably go up. Females and the elderly will increase their participation in criminal activities. Cities will be safer, and small towns and rural areas will be more dangerous. The computer will become a major site of criminal activities. Increases in the size of the elderly population will stimulate the growth of medical swindles and insurance frauds.[93] The rates of domestic violence, rape, and child abuse are likely to increase as victims are encouraged to report their experiences to police and find better support services.[94]

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[88] Weisheit, R., Falcone, D., Wells, L.E. (1994, October). *Rural crime and rural policing.* Washington, DC: National Institute of Justice.

[89] Crank, J. (1995). The community-policing movement of the early twenty-first century. In J. Klofas and S. Stojkovic (Eds.), *Crime and justice in the year 2010* (pp. 107-126). Belmont, CA: Wadsworth.

[90] Currie. *Confronting crime,* 94.

[91] Walter, D. (Ed.). (1992). *Today then.* Helena, MT: American & World Geographic Publishing, 23.

[92] Wells, L.E. (1995). Explaining crime in the year 2010. In J. Klofas and S. Stojkovic (Eds.), *Crime and Justice in the Year 2010.* Belmont, CA: Wadsworth.

[93] Bennett, G. (1987). *Crimewarps: the future of crime in America.* Garden City, NY: Anchor/Doubleday.

[94] Hagan, F. (1994). *Introduction to criminology.* (3rd ed.). Chicago: Nelson-Hall, 545.

Criminal organizations may eventually control the governments of entire countries.[95] A shift to a cash-free society will make theft and robbery difficult and the illegal or unauthorized transfer of money easier to detect and prosecute.[96]

It is likely that new technology will be found to control crimes and criminals in the next century. For example, auto theft may become obsolete. Auto-Avenger is a remote-controlled device that shocks a thief attempting to drive off in a stolen car after it immobilizes the vehicle.[97] Weapons of the future may be safer. A computerized safety lock on a gun that reads the user's fingerprints or a gun locked by a combination would make it difficult for an unauthorized individual to use the weapon. Nonlethal weapons that immobilize an individual until he or she is apprehended are already available (capture nets, immobilizers, or tasers), and they could become more prominent as the police use of deadly force is restricted.[98] Criminals who do not pose an immediate threat to others might be controlled through "walking prisons" in which an offender's movements are electronically monitored to keep him or her from committing future crimes. Criminals could be required to wear implants that register their emotions and release drugs to sedate them if they get into trouble.[99] The physical addiction to drugs might be remedied in the future by the discovery of a drug that breaks an addict's habit.[100]

Future Implications

The criminal justice system has an important role to play in combating crime, and few will dispute that we need an effective and efficient one. However, no amount of police, prisons, laws, or harsher and longer sentences will be able to do much to achieve the safe, secure, *and* viable society that we seek. We will not fix the crime problem with legislation and imprisonment. Crime exists because of fundamental social contradictions and the impact that these have on the human spirit and personal development.

A deteriorating community, where people know little about their neighbors and lack concern for them, offers great opportunities for predatory crime.[101] Not only will neighbors have little incentive to treat each other with kindness and respect, they will have little incentive to help each other in times of need.[102] What we are seeing in many parts of the United States is the impact of decades of neglect, economic deprivation, and social impoverishment on communities, families, and individuals.[103] The quality of the social environment must become a top priority in the nation, and it must remain an important item on the political agenda for the years ahead.[104]

We in Kentucky might rest on our laurels and do nothing, taking pride in our relatively low rates of crime. However, our quality of life might be improved far more if we resolve that one crime is one crime too many and then work together to eliminate some of the more brutalizing social conditions—poverty, inequality, unemployment, prejudice, discrimination, lack of opportunity—that can be the breeding grounds for both crime and human suffering. Levels of social support must increase so that citizens develop a trust in each other and a personal interest in the well-being of their communities. High social support seems to reduce criminogenic strains, and it provides the social capital needed to resist criminal involvement.[105]

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[95] Moore, R., Jr. (1994, September-October). Wiseguys: smarter criminals and smarter crime in the 21st century. *The Futurist,* 28, 33-37.

[96] Warwick, D. (1992, November-December). The cash-free society. *The Futurist,* 26, 19-22.

[97] Shock treatment for carjackers. (1993, March-April). *The Futurist,* 21, 5.

[98] Swank, C. (1993, Spring). The police in the 21st century: hypotheses for the future. *International Journal of Comparative and Applied Criminal Justice,* 17, 106-120.

[99] Winkler, M. (1993, July-August). Walking prisons. *The Futurist,* 27, 34-36.

[100] Cole, G. (1995). Criminal justice in the twenty-first century. In J. Klofas and S. Stojkovic (Eds.). *Crime and justice in the year 2010* (pp. 4-17). Belmont, CA: Wadsworth.

[101] Felson, M. (1986). Linking criminal choices, routine activities, informal control, and criminal outcomes. In *The reasoning criminal: rational choice perspectives on offending.* New York: Springer-Verlag, 123.

[102] Smith-Mello, M. (1996). Community, trust key to our economic and social future. *Foresight,* 3.

[103] Currie. Confronting crime, 18.

[104] Currie. Confronting crime, 23.

Kentuckians will find themselves in the crossfire between what works and what they can afford, as well as between what works and what is consistent with their values. Different groups have different understandings about the causes of crime and what should be done to control it, and they often clash with one another over goals and means. The crime problem cannot be separated from other social problems, and social problems cannot be separated from other happenings in a society. The first step toward taking crime seriously is to renew our commitment to the long-term challenge of strengthening families, integrating neighborhoods, building communities, improving social institutions, and providing rewarding jobs for all who need them. At some point we must realize that individual change must be based on sociocultural change or it will fail. This crime control strategy is the only one that has any chance of long-term success.

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[105] Cullen, F. (1994, December). Social support as an organizing concept for criminology: presidential address to the academy of criminal justice sciences. *Justice Quarterly*, 11, 527-559.

Kentucky and the State of Human Rights

Women and minorities do not have an effective voice in Kentucky's political arena where critical social and economic gains are won and lost. From income and wage inequities, to the quality of life they afford, women and minorities are disproportionately disadvantaged. Concerted attention is needed in order to enable the economic inclusion of women and minorities and the social inclusion that would enable individuals from diverse races and cultures to become full participants in shaping a preferred future for the Commonwealth.

By Saundra C. Ardrey
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Citizens of the Commonwealth who participated in the Kentucky Long-Term Policy Research Center's 1995 public forums concluded that as we approach the year 2000, one of the goals of our state must be to create communities that value and respect all cultures, races, ethnic backgrounds and religions. These citizens understand the value of diversity and inclusion. As globalization advances, Kentucky must better position itself to become a full participant. Because, as the Center observes, persistent homogeneity may become an obstacle to development, a more receptive climate for diversity is key to our future.[1]

Diversity simply means that all citizens are included in the political and economic institutions of the state and in the very fabric of its society. Access to jobs, both in the private and public sector, participation in the social and cultural life of communities, and citizen attitudes are measures of the "comfort level" or the receptivity of an environment to diversity. This chapter examines that climate of receptivity to diversity or the state of human rights in Kentucky through an exploration of economic, social and political trends affecting women and minorities in the state.[2]

Political Inclusion

One of the ambitious citizen goals presented in *Visioning Kentucky's Future* is that government at all levels throughout the state will be open, accountable, participatory and responsive.[3] This expressed goal of inclusion in the policymaking process is shared by democratic republics around the world. Broad citizen participation helps to assure that the goals and objectives of citizens will be translated into policy outcomes. Extending women and minorities a voice in the process that determines the allocation of limited resources is of paramount importance in the drive to improve opportunity and the socioeconomic status it enables.

In the 19th and early 20th centuries, the Commonwealth of Kentucky defined women as citizens, but citizens were afforded different rights on the basis of sex, race and ethnicity. Despite the formal equality the right of citizenship ordinarily entails, women were denied the right to vote and the right to hold public office. Upon marriage, a woman experienced "civil death," a legal arrangement that merged her interests and her identity with her husband. She could not own property and had no legal custody of her children.

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[1] Smith-Mello, M. and Schirmer, P. (1994). *The context of change.* Frankfort, KY: Kentucky Long-Term Policy Research Center.

[2] Analysis will focus on African Americans in the state who numbered 262,907 in 1990, as compared to significantly smaller numbers of Hispanics (21,984), Asian or Pacific Islanders (17,812) or Native Americans, Eskimo, or Aleut (5,769) whose small numbers prohibit inclusion in this chapter.

[3] Kentucky Long-Term Policy Research Center. (1995). *Visioning Kentucky's Future.* Frankfort, KY: Author.

Such restrictive rules and regulations were gradually overturned when Kentucky ratified the 19th Amendment in June 1919. With ballot in hand, Kentucky women began the long and arduous task of reforming state laws relating to women's rights, especially those that denied women the same opportunities as men. While Kentucky women have narrowed the socioeconomic gender gap, there is still much work to be done.

In the political sphere, gains have been marginal. In 1990, women represented 52.1 percent of the population of Kentucky, a majority status that has yet to be matched by a concomitant number of female elected officials. The 1,115 women who hold elected office statewide places Kentucky with Alabama and Louisiana, those states with the lowest female representation in the nation. Today, according to the Secretary of State's office, only 14 percent of local government offices are held by women. No women presently serve as commonwealth attorneys, and only two are sheriffs. Just three women are circuit judges while four serve as coroners. School board posts (27 percent women) are the most common office held by women. Fifty percent of county clerks are women—a bright spot in an otherwise dismal picture of female representation at the county level, while only 4 percent of the state's judge-executives and only 9 percent of all fiscal court members are women. Figures for cities are slightly better. Of the 400 mayors, 60 are women, and 11 percent of city council members are female. This portrait of underrepresentation is mirrored in the General Assembly where, as of January 1997, only nine women serve in the House and two in the Senate. In this critical arena, Kentucky ranks next to last in the nation.

In 1990, women represented 52.1 percent of the population of Kentucky, a majority status that has yet to be matched by a concomitant number of female elected officials.

Not only do these statistics demonstrate how far women must go to become a more potent political force, they also partially explain why many legislative issues affecting women are not priorities. For example, a recent bill designed to bring pay equity to women in state government sailed through the House only to hit a snag when a Senate committee amended it to require favorable consideration of men when setting pay for state job classifications.[4] According to a study by the Kentucky Commission on Human Rights, women in state government earn only 87.4 percent of what men earn.

It is somewhat puzzling why women have not been more successful in translating their numbers into representative parity. Kentucky women account for 54 percent of the eligible electorate, and their political participation, i.e., registration and turnout, shows only slight gender differences. In the 1992 presidential election, registration for all eligible Kentucky citizens was 64.9 percent with 57.6 percent voter turnout. Among men, registration was 66.1 percent and voter turnout was 59 percent while female registration was 63.8 percent with turnout at 56.3 percent. In Kentucky, however, women trail the national average in both registration (-6.5 percent) and turnout (-3.3). Likewise, among Southern women, Kentucky women had lower rates of registration (-5 percent) and turnout (-4 percent).

One of the reasons women have not translated their majority into legislative mandates has been the obstacle of developing a strong public consensus around full equality for women. As a result, the woman's "voice" seldom speaks as a block vote behind a consensus agenda or candidate although gender preferences are increasingly evident. In Kentucky, the state's political culture of factions that favor men and the "good old boy network" also inhibit female participation. Few women are recruited for office by party patriarchs, making it more difficult for them to raise the funds needed to mount effective campaigns. Women also confront the burden of juggling family obligations with those of service in Frankfort. All of these barriers combine to attenuate the ranks of women who run for office.

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[4] Pay equality bill takes hit in senate committee. (1996, March 15). *The Courier Journal*, p. 2B.

While the barriers are formidable, women must run for public office if they hope to improve representation. Clearly, the electorate has demonstrated considerable receptivity to female candidates. Indeed, research shows that in open seat races where a woman faced a man, women won more than half the time.[5]

The political history of African Americans in Kentucky in many respects has reflected the political experience of Blacks in the nation and the South in particular. While the vestiges of slavery fostered a rigid Jim Crow system in Kentucky that persisted throughout much of the 20th century, African Americans were entrusted to vote without discrimination and empowered with all other constitutional rights and privileges in 1870. Since that time, African Americans have made significant political strides with pioneers such as Charles Anderson, the first African American elected to the Kentucky legislature in 1936, and Georgia Powers, the first African American to serve in Kentucky's Senate, paving the way for others, such as Mae Street Kidd and Charlotte McGill. Currently, there are four African Americans in the House and one in the Senate. But African American representation in the General Assembly is only 3.6 percent compared to 7.1 percent of the population, a level of representation that ranks 29th among all states and 13th among the 19 southern and border states.

Indeed, Kentucky has the smallest number of black elected officials of any southern state. While partly a reflection of Kentucky having the smallest black population in the South, the gap between representation and population is not negated. Nearly 17 percent of urban Louisville's population is African American while 13 percent of the Lexington population is black. Combined, Lexington and Louisville comprise 57 percent of Kentucky's black population. In Jefferson County, the fiscal court has one black member out of three seats. Blacks hold four seats on Louisville's 12-member Board of Aldermen, and in Lexington, the urban-county council has two black members. Other municipalities in the state do not fare as well. Bowling Green-Warren County (13 percent black population), for example, has one black commissioner.

> *The goals of inclusion and of a participatory government remain illusive in Kentucky because a significant segment of the state's population continues to be shut out of the political process.*

Broadly, black representation is increasing. Sixty black elected officials held municipal offices in 1996, an improvement from 49 in 1988. The number of school board members also increased from a record 17 in 1978 to 25 in 1996. Twenty-seven black women served in elective offices in 1988, compared to 16 in 1966. One black woman serves at the state level as a representative from Jefferson County. However, Madisonville, which has a 13 percent black population, has no black representation, nor does Hopkins County, the population of which is 7 percent black.

Voter registration and turnout levels among African Americans in the state mirror participation rates in the South and in the nation as a whole. For the African American community in Kentucky, registration for the 1992 presidential election was 61.4 percent while voter turnout was 53 percent. In the South, African American registration and turnout were 64.7 percent and 54.3 percent. National figures for African Americans were 63.9 percent for registration and 54 percent for turnout. Registration and turnout were slightly higher in the white community at 65.5 percent and 58 percent respectively.

The goals of inclusion and of a participatory government remain elusive in Kentucky because a significant segment of the state's population continues to be shut out of the political process. Women and minorities do not have an adequate voice in the political arena. This absence cannot be attributed to disparities in political participation, as the data demonstrate that the rate of participation, while low for all Kentuckians, varies only slightly between women and men and between minority and majority communities. Moreover, a turnout rate of only 56 percent suggests there is much potential for growth. Though we are making progress in the number of women and minorities elected to public offices, it has been slow and incremental.

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[5] Ardrey, S. (1994). Data collected on the political behavior and participation of women in Kentucky.

Economic Inclusion

Most Kentuckians depend on their jobs to provide for themselves and their families. Discrimination interferes with an individual's ability to provide that support and is a violation of the Kentucky Civil Rights Act. This Act prohibits discrimination in employment, housing, public accommodation and credit on the basis of race, color, religion, age (40 and over), sex, disability, national origin, or family status. Yet discrimination continues to take a toll.

Sexual harassment in the workplace is a significant economic threat for many women. A Bluegrass State Poll, conducted by the *Courier-Journal* in September 1995, found that almost one in four working women in Kentucky had experienced sexual harassment on the job. The number of sexual harassment complaints filed in Kentucky with local, state and federal agencies has risen steadily from 59 cases in 1989 to 183 cases in 1994. It is unclear if the increase is indicative of increased occurrences of sexual harassment or greater awareness among women that such treatment is illegal. The majority of sexual harassment cases involve "hostile environment," rather than physical breaches. A "hostile environment" involves such issues as unwelcome sexual advances, requests for sexual favors and other verbal/physical conduct that create an offensive work environment.[6] Importantly, women in Kentucky have strong advocates on this issue. The U.S. Supreme Court, Kentucky lawmakers and the Human Rights Commission all stand firm that sexual harassment is not to be tolerated and is a violation of the Kentucky Civil Rights Act.

As a general rule, consideration of key economic indices such as the distribution of income and wage earnings are not only of interest in and of themselves, but also as an indication of quality of life disparities. Women and African Americans are at the lowest end of the economic ladder and, more often than not, entrapped by poverty. The primary reason for these circumstances are the income and wage disparities between men and women and between the races. Census data from 1990 show that Kentucky women employed full-time earned an average of $18,352 a year, compared to $29,283 for their male counterparts—an earnings gap of 62.7 cents for each dollar earned by men. Nationally the gap was 64 cents. Even among women there is also a racial gap. White women on average earned $18,458, compared to $16,272 for African American women. African American women, however, earned more relative to African American men—99.9 cents per dollar—than did white women relative to white men—62 cents per dollar earned by white men.[7]

This disparity in wages is also evident in the corridors of state government. In *Status of Women in Kentucky State Agencies, 1994*, the Human Rights Commission reports that women in state government earned 87.4 percent of their male counterparts' wages, $23,391 compared to $26,778. Nevertheless, the average female wage rose 2.6 percent from 1990 to 1994, a positive trend which has steadily improved since 1978. During this time, the female workforce expanded in the professional, official and managerial classes, as women gained 745 positions. Women, however, continued to be excluded from 568 job classifications or almost one third of all job classes in state government. While women in state government are making progress, the rate of improvement has been slow. At this pace, according to Beverly Watts, Executive Director of the Commission, at the current rate of improvement, workforce and payroll parity will not be achieved until the year 2005.

In a similar report, *Status of Blacks in Kentucky Government Agencies, 1994*, the Commission found that the gap between average salaries paid to black and white employees narrowed by $174 between November 1991 and November 1994. Blacks were paid on average $4,434 less than whites in 1994, $20,970 compared to $25,404 per year. Although the 3.8 percent reduction from the salary gap of $4,608 in 1991 was small, it was the first decline in the salary measure since 1975. Similar to the integration of women into more state agencies, the Commission found that blacks were assigned to more job classes, fewer were assigned to job classes with a high concentration of blacks, and fewer job classes were all white in 1994 than in 1991. While it appears that much progress has been made, closer inspection reveals that eight of every ten jobs gained were concentrated in a few politically sensitive, high-profile, high-salary jobs in three cabinet offices: Revenue, Public Protection & Regulation, and Justice. The report concludes that the progress "is a precarious one which could be easily retraced without continued vigilance for equity and a commitment to diversity by the new state government administration."[8]

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[6] One woman in four says she's been harassed. (1995, October 26). *The Courier-Journal.*

[7] Stewart, H. (1991, June). *Women in Kentucky: A documental profile*. Frankfort, KY: Cabinet for Workforce Development.

Such vigilance and commitment could be better assured through a genuine commitment to the state's affirmative action program. The state's plan, enacted in 1972, requires that women and minorities be recruited, that managers be trained in "equal employment opportunity," and that discrimination be eliminated. While the hiring plan does not set goals or quotas, the informal mandate followed by most governors has been to create a workforce that reflects the state's population. But compliance with the plan remains spotty at best, and retributions range from lenient to nonexistent. Given the current economic state of women and minorities in Kentucky, affirmative actions are sorely needed in hiring practices and in the procedures governments use to purchase goods and contract for services.

Louisville and Jefferson County have wrestled with set-aside programs and laws that encourage purchasing officials to give up to 15 percent of the city's business to minority contractors. But in 1993, only 4.4 percent or $2 million of the $87 million budget spent on goods and services went to minority-owned businesses. To increase minority business participation, the city and county governments have sponsored loan programs and seminars on how to win government contracts and distributed a directory of minority vendors to government agencies. Invitations to bid sent to general contractors are accompanied by the names of at least five minority vendors as possible subcontractors.[9] A stronger commitment to such affirmative efforts and greater incentives must become a statewide priority if Kentucky is to overcome economic disparities.

Since women and African Americans on average earn less than men and whites in the state, they are less able to provide the necessities of life and often number among the ranks of the impoverished. According to the 1990 Census, about 6.3 percent working families at the national level were found below the poverty level. However, if the family was headed by a woman, the family was far more likely to be poor. In Kentucky, nearly 12 percent of all working families live in poverty, but 35 percent of female-headed families are poor, nearly double the national rate. The poverty rate for African American women who head households is even more devastating at 40 percent. One of every five black family heads with at least one year of college is poor, a decrease in the 1980 poverty rate of one in three in poverty. Over the course of the decade, the number of African American women with some college living in poverty actually increased nearly 7 percentage points.

> *Women in Kentucky earned less money and were paid lower wages than men at all educational levels.*

Generally, education determines the level of income and wage compensation. Not so for women. Women in Kentucky possess the majority of bachelor's degrees (59 percent), as well as the majority of degrees at the graduate and professional level. Further, women in the state earned 58.6 percent of all degrees in 1989-1990.[10] Yet women earned less money and were paid lower wages than men at all educational levels. Female college graduates actually earned less than men with less than a high school education.[11]

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[8] Kentucky Commission on Human Rights. (1995). *Status of blacks in Kentucky state agencies.* Louisville, KY: Author, 3.

[9] O'Doherty, M. (1993, October 9). City, county falling far short of goals in minority contracts. *The Courier-Journal*, p. 2A.

[10] Stewart, 7.

[11] Stewart, 29.

Income and wage disparities clearly have implications for quality of life. Health, for example, is a nearly perfect measure of quality of life. Healthy people enjoy a higher quality of life, because they remain economically productive longer and live longer. The health of Kentucky's women is indicative of the state's health: 25 percent of all pregnant women do not receive prenatal care in the first trimester of pregnancy, and nearly half of the teenage mothers receive no care. The infant mortality rate, the number of deaths for infants under one year of age, is consistently higher than that of the United States. While Kentucky's mortality rate went down 14 percent from 1988 to 1989, deaths of infants born to teen mothers experienced an increase. Twenty-three percent of the infant deaths were from this group.[12] High rates of infant mortality and poor health of women persist despite efforts of state agencies and community outreach organizations. Efforts are hindered by the inaccessibility of many of the services. Stewart reports that in a recent study, women suggested that lack of transportation, money, knowledge of facilities/activities and lack of child care were barriers that caused them to forego health facilities and related services.

Disparities in quality of life are reflective of an unequal distribution of wealth and income in Kentucky. Further, no trends toward a narrowing of the gap between the races are discernible, and only minuscule progress is being made between the sexes. From most indices, the income gap appears to be widening. Much of the gap between the haves and the have nots is grounded in gender and racial inequities that serve only to separate communities, deepen hostilities and preempt communication.

Social Inclusion

The degree to which women and minorities are part of the social fabric of a community is another benchmark on which to evaluate diversity. Full inclusion in the life of the community means the ability of all groups to live and to interact socially without prescribed constraints or other *de facto* barriers. Several laws have been enacted to ensure equality of opportunity and equal access for the women of Kentucky. Gender-biased signs and advertisements, for example, are illegal in Kentucky. In spite of the protections enacted, discrimination continues to inhibit the social inclusion of minorities. Nevertheless, recent tragedies in Kentucky have awakened citizens and communities to the consequences of hatred and bigotry.

Racial incidents over the past two years have highlighted two irrefutable facts in Kentucky: hostilities between the races continue to exist *and* much work remains to be done to bridge the gap between majority and minority cultures. The October 1994 accidental shooting of an African American youth by a white police officer sparked several days of civil unrest in Lexington where African American leaders have warned for years that racial problems, which run the gamut from jobs discrimination, to crime victimization, to housing access, have been simmering, largely unacknowledged by a white-dominated power structure.[13]

But crisis and conflict are helping Kentuckians forge community and confront racial divisions with a new honesty. The Lexington incident has resulted in unprecedented community attention to racial inequities. Groups such as Citizens Advocating Responsibility and Equality (a group of local black organizations and businesses) and the Mayor's Youth Council (a group of high school leaders) are sponsoring "speak outs" and other public forums to discuss race relations. Local institutions, including the urban-county government and the Chamber of Commerce, are initiating or expanding projects to make jobs available to minorities. And African American leaders are being consulted as public officials map city goals and objectives for the 21st century—a level of cooperation heretofore unheard of in Lexington.

Much the same kind of community togetherness was seen in Guthrie, Kentucky, when a white youth was killed by four African Americans angered by a Confederate flag in the back of the boy's pickup truck. The shooting precipitated numerous cross burnings and angry confrontations that exposed smoldering racial tensions in this Tennessee border town. But the boy's family and black churches in the community called for calm and unity. In McVeigh, Kentucky, a small coal mining community on the West Virginia border, clashes between black and white high school students have caused town leaders to begin openly discussing racial divisions. And in Bowling Green, several incidents in the city's predominantly black west side have spurred police efforts to recruit minority officers. The percentage of minority officers in the city's police department is lower today than it was 10 years ago. With an estimated minority population of 13 percent in the city, only four of the city's 90 officers (less than 5 percent) are minorities.

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[12] Stewart, 12.

[13] Wilson, R. (1995, January 30). Lexington slaying puts races in touch as grand jury meets. *The Courier Journal,* p. 1A.

While racial incidents and hostilities still surface in both urban and rural areas, the state is making progress toward an inclusive, mutually accepting environment. The Commonwealth has come a long way since the 1960s when resistance to desegregation inflamed tensions. The key to continued progress is through social interaction and familiarity with "the other." In Jefferson County, where tensions flared 21 years ago when students were bused to achieve court-mandated racial balancing, integration has advanced significantly. The percentage of interracial marriages has more than doubled in the last 10 years. In 1985, one in every 100 marriage license issued in the county was for a black-white couple, compared to one in every 50 licenses in 1995. In 1970, 17 Jefferson County census tracts—home to more than 50,000 people—had no black residents. By 1990, only one all-white tract, home to about 4,000 people, remained. But the movement of African Americans out of inner city Louisville into the suburbs of Jefferson County is a work in progress, as most residents of Jefferson County, as well as elsewhere in the state, continue to live in neighborhoods that are racially identifiable.

Slowing the movement, of course, is the lack of employment opportunities and low wages for many African Americans. The cost of homes in the suburbs remains outside the financial means of most black families. In Fayette County, for example, land values south of the downtown Lexington area have attracted mostly affluent whites. Less costly housing developments north of downtown have attracted less affluent blacks. The result is a city divided by race.[14] This modern day version of segregation perpetuates a cycle of discrimination in Lexington and other cities that is caused by a housing market that discourages mixed-price-range homes within a neighborhood; subtle and institutionalized discrimination in mortgage lending, real estate, and insurance; school building policies that accommodate segregated neighborhoods; and the force of tradition. All feed a vicious cycle of housing segregation.[15] Because of the new dialogue between the African American and white communities in Lexington, some community leaders want to break the cycle of segregation with a land use plan that encourages racially integrated, mixed-price housing; scattered site public housing; incentives to developers for affordable housing set-asides; and affordable housing mandates.[16]

> *In Fayette County, for example, land values south of the downtown Lexington area have attracted mostly affluent whites. Less costly housing developments north of downtown have attracted less affluent blacks. The result is a city divided by race.*

Another innovative way to integrate neighborhoods racially, socially and economically is being tried by the Section 8 Housing Office of the Jefferson County Housing Authority. The Authority provides residents who are interested in moving into integrated neighborhoods with more housing options than are available in traditional minority neighborhoods with transportation to search for rental property and acts as an ombudsman between clients and potential Section 8 landlords.[17]

Innovative ideas like the Lexington land use plan and the Section 8 suburban, desegregated housing program are to be encouraged; no doubt the citizens of Fayette and Jefferson County have experienced firsthand the hostility, bigotry and misconceptions that physical segregation can cause. The Human Rights Commission of Kentucky has worked diligently for several decades to ensure that state agencies and businesses not only comply with civil rights laws and mandates but also to create an environment throughout the state that is inclusive. Several examples illustrate this effort. The Kentucky Civil Rights Act, under the Public Accommodations provision, prohibits racial discrimination in public facilities. At the urging of the Commission, racially offensive street signs throughout the state are gradually being removed. The Kentucky Tourism Cabinet adopted a policy in the Spring of 1994 concerning the sale of Civil War memorabilia in its state parks. The Department will sell only Civil War items with interpretative and educational value and only in parks with direct ties to the Civil War. The new policy was developed after the Tourism Department was notified by the Kentucky Commission on Human Rights that the display and sale of Confederate flags and symbols were considered offensive to African Americans.[18]

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[14] Kentucky Commission on Human Rights. (1995). *Human rights report*. Louisville, KY: Author.

[15] Kentucky Commission on Human Rights. (1995).

[16] Kentucky Commission on Human Rights. (1995).

[17] Kentucky Commission on Human Rights. (1994). *Human rights report*. Louisville, KY: Author.

Conclusion

Kentucky, like most states, has its fair share of racial problems, as well as lingering gender inequities. But the state is fortunate to have a plethora of organizations and citizens who are seeking honest solutions to inequities and racial differences. Black and white Kentuckians agree that individuals and families are primarily responsible for improving race relations—more responsible than the media, schools, police or the government. Consistent with this belief in social responsibility, individuals throughout the Commonwealth are meeting in groups to discuss the problems that divide and opportunities that unite the races. Groups such as the Bridge Builders Roundtable and Network in Louisville and black and white congregations that speak out against church bombings are fostering a new climate of receptivity to diversity and change. These are the individuals on the front lines of the struggle for equity—groups of average citizens working shoulder to shoulder with elected and public officials and the business community to begin dialogues that will dissolve the hatred and the lies that divide us.

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[18] Kentucky Commission on Human Rights. (1994).

Section II

Our Emerging Culture of Learning

In this section of our report, we turn to the emerging culture of learning and its impact on individuals and institutions in our society. An intensifying demand for highly skilled workers and a widening earnings differential linked to education are compelling broad societal change. More and more individuals are pursuing education and training beyond high school in response to the demands of a changed economic context. At the same time, these new demands are challenging institutions to provide students with a broader, richer, more relevant educational foundation on which to build a lifetime of learning. To do so, they must redefine institutional priorities and restructure systems that no longer efficiently and effectively serve students and citizens.

Here, Kentuckians are challenged to think back to our recent past and imagine what we might have hoped to achieve in the realm of education in the closing years of the 20th century. This exercise reminds us of what remarkable, previously unanticipated progress we have made in a relatively short time. It also serves to demonstrate what we can achieve in Kentucky when we muster the will to change for the better. As we approach the 21st century, the Commonwealth of Kentucky has become the preeminent national model for systemic school reform, a seemingly unimaginable scenario just a few short years ago. Now, higher education reform has ascended to the top of the educational agenda in Kentucky, and substantive responses are expected to follow in the years ahead.

Mounting evidence also suggests that the people of Kentucky, regardless of age, are responding to the call for individual change, applying their extraordinary work ethic to the challenge of learning and becoming fuller participants in a marketplace that demands high skills in return for access to prosperity. Gradually, the sheer tenacity and the unsung ingenuity that have enabled many to carve something out of nothing in economically depressed regions of the state is being transformed into a desire to learn and to expand personal possibilities. One by one, individuals, schools, colleges, and communities are shaping a new identity for Kentucky, one that will no longer be defined by poverty and undereducation. Collectively, they are building a new legacy, one that will relegate "the educational wasteland of the past" to the margins of history.

In this section, Dan Black, Kermit Daniel and Seth Sanders explore the relationship of earnings opportunities for high school graduates relative to nongraduates and their impact on high school dropout rates. Specifically, they examine the experiences of Pike County, Kentucky, during the coal boom of the 1970s. Their conclusions underscore the importance of tangible economic incentives for educational attainment, which have diminished for high school graduates in recent years, and of educational content that is closely linked to workplace demands.

Robert Sexton and Stephen K. Clements review Kentucky's progress in school reform and the challenges that remain. While the Commonwealth has made tremendous progress, the depths of change, they suggest, have yet to be plumbed. In the coming months and years, education policymakers must contend with, among other issues, the perplexing problem of shaping reliable tools of assessment; the imperative of elevating both the quality of instruction and standards for achievement; and demographic shifts that will influence the population of teachers and students.

Michal Smith-Mello discusses trends that are exerting pressure on the higher education community. Like their counterparts around the nation, Kentucky's publicly financed institutions of higher education face an almost certain era of restructuring and change. Public concerns about cost and quality have placed higher education under unprecedented scrutiny that is unlikely to abate. Neither are the underlying causes of increased costs to students. As a consequence, policymakers and the higher education community face a difficult reckoning.

In the final essay in this section, Stephan Goetz examines the forces influencing workforce training in today's economy. The rising demand for skilled technical workers who are oriented to post-Taylorist or "high performance" ways of working underscores the need to align education standards with the new demands of the work world. Kentucky's efforts to strengthen this link are well underway, but its challenge is complicated by the need to train and retrain an aging workforce, engender a culture of learning in an undereducated population, and ensure returns to investment in job training in rural areas where undercapitalized, low-wage firms dominate.

In sum, these essays underscore the imperative of achieving institutional excellence that will link educational priorities with the real world of work and accommodate the changing needs of citizens and enterprises throughout the Commonwealth. More than ever before, our economic future depends upon the commitment and the tenacity we bring to this immense challenge. As our recent past has shown, the future will be what we determine to make it now. Both our remarkable progress and the sheer will of the people of this state suggest every reason to be hopeful about what lies ahead for education in the Commonwealth.

The Earnings of Dropouts and High School Enrollments: Evidence from the Coal Boom and Bust

The coal boom of the 1970s may have had an unanticipated outcome in Pike County, creating high-wage, relatively low-skill jobs in the local economy that effectively rewarded dropping out of high school. The implications are significant for an economy that has continued to produce incentives for college graduation, while providing little incentive to complete high school. These findings underscore the importance of linking economic reward to academic achievement. Earnings opportunities for high school graduates can be improved through better academic preparation for the workplace of today.

By Dan Black
University of Kentucky

Kermit Daniel
University of Pennsylvania

Seth Sanders
Carnegie-Mellon University

Economic theory suggests that when students make the decision to drop out of high school they consider how their decision will affect their earnings. Thus, economists would expect that, if the reduction in earnings from dropping out of school is minimal, dropout rates will be high. As the loss of earnings for dropouts grows, however, the dropout rate should decrease. This paper summarizes an attempt to see if these predicted effects actually occur by looking at changes observed in dropout rates in some areas of Kentucky in the 1970s and 1980s.

The 1973 OPEC oil embargo caused a huge increase in the price of coal which, in turn, greatly expanded the demand for workers in the coal industry. Because many of the jobs in the coal industry require little in the way of formal schooling, this sudden change greatly affected the relative earnings of high school graduates and dropouts in a very short time.

Due to the oil embargo, Kentucky areas with coal experienced rising employment and earnings while other areas within relatively short distances suffered the declines in economic activity experienced by the overall economy as energy prices soared. As the oil prices declined, the demand for coal also declined, causing a subsequent bust in the coal market in the 1980s. This reversed the gains in employment and earnings experienced in the coal-producing regions during the 1970s.

The increases in coal prices in the 1970s were large by any standard. The real price of coal increased 44 percent between July 1973 and July 1974, and then remained relatively stable until about 1978, when it began a gradual decline through the 1980s and 1990s. The large upswing in coal prices had a major impact on Kentucky's economy. In 1972, mining earnings accounted for only 4.2 percent of the earnings of all Kentuckians, but by 1980 mining accounted for 9.4 percent of earnings. The economic benefits of the coal boom, however, were not spread evenly across the Commonwealth. Only 52 of Kentucky's 120 counties have coal reserves and, among those with reserves, there is great variation in the amount. Unfortunately for Kentucky, the coal bust that followed was equally sharp. Between 1982 and 1992, there was an 82 percent reduction in the number of coal miners in Kentucky.[1]

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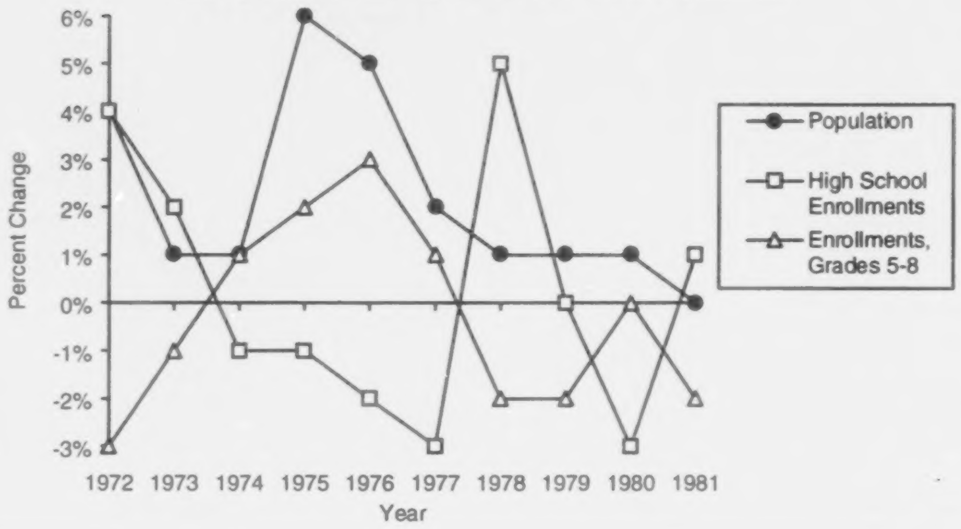
[1] Kentucky Coal Marketing and Export Council, Cabinet for Economic Development, and Kentucky Coal Association. *Kentucky Coal Facts 1993.*

FIGURE 9.1
Change in Pike County Enrollments and Population



As earnings in the coal industry fluctuated, so did high school enrollments in counties providing mining labor. Figure 9.1 provides a clearer view of the impact of the coal boom on high school enrollments. It depicts the rates of change between 1972 and 1982 in high school enrollments, enrollments in grades 5 through 8, and in population, for Pike County, Kentucky. Pike County is the largest coal-producing county in eastern Kentucky, with a population of 72.5 thousand people in the 1990 Census. Two features of the graph stand out. First, the change in population and the change in pre-high school enrollment track one another reasonably well. Second, the change in high school enrollments almost always moves in the opposite direction of changes in population: As population increased, high school enrollments decreased, and vise versa. This strongly suggests more and more students were not completing high school during the coal boom, but were dropping out to take jobs in the coal, and other industries, that were expanding at the time. The coal industry does not generally require its workers to have much formal schooling. As a result, the coal shock increased the earnings of high school dropouts relative to high school graduates, which caused a decline in high school enrollments.

Further evidence comes from estimating the effect of changes in earnings on changes in high school enrollment. Changes in earnings were estimated using data from the Bureau of Economic Analysis' (BEA) Regional Economic Information System for 1969 through 1993. Enrollment data was taken from various sources within the Department of Education. The estimate made with this data indicates that a 10 percent increase in earnings within a county reduces high school enrollments by about 2.5 percent. Thus, high school enrollments seem fairly sensitive to the opportunities for unschooled workers in the surrounding area.

If the coal boom reduced the incentive for some students to finish high school, then the coal bust in the 1980s should have increased the incentive to finish. Data from the Current Population Survey shows that, during the 1980s, there was a fundamental shift in the distribution of earnings in the United States. Workers who had relatively more education received much higher real wages, while workers with relatively little education saw large reductions in their real wages. It seems reasonable to expect that the large change in relative earnings affected the incentives students had to attend school.

TABLE 9.1
Relative Earnings of Kentucky Males Aged 25 to 55
Current Population Surveys, 1980 and 1990

	1980	1990
Earnings of those who did not attend high school relative to high school graduate	-27.8 %	-33.8 %
Earnings of high school dropouts relative to high school graduated	-17.3	-15.9
Earnings of those who attended, but did not graduate, from college relative to high school graduates	14.6	12.3
Earnings of college graduates relative to high school graduates	32.2	59.5
Earnings of graduate degree recipients relative to high school graduates	22.5	63.7

Notes: Data from the National Bureau of Economic Research's outgoing rotation CD. Estimates are from a regression that includes controls for race, marital status, potential experience, and time of interview. There are 1800 observations.

Estimates for Kentucky males between the ages of 25 and 55, given in the first column of Table 9.1, indicate that, in 1980, high school dropouts earned about 17 percent less than those who completed high school. Those who completed college earned about 32 percent more than high school graduates. The results for 1990, in the second column of Table 9.1, show a remarkable change. By 1990, those who completed college earned nearly 60 percent more than those who completed high school. Thus, Kentucky seems to have exhibited much the same patterns of earnings as the United States as a whole.

The results in Table 9.1 also indicate that wages of dropouts relative to high school graduates did not change much over the decade. While in 1980 dropouts earned 17 percent less than those who completed high school, they earned only 16 percent less than high school graduates in 1990, although this difference is not statistically significant. Thus, the 1980s provided little change in the incentive to complete high school. The wages of high school graduates declined in the 1970s and 1980s while the earnings of college graduates have increased.[2] Thus, the incentives to attend college have increased, but not the incentive to complete high school.

Implications for the Future

The change in relative earnings during the 1980s appears to be continuing in the 1990s. Many of the jobs in the past, such as farming and mining, required little in the way of formal education. As Kentucky's economy changes, however, its labor market is reacting. Several industries are growing as we move from our traditional agricultural economy, to one more concentrated in manufacturing and service. Jobs in the manufacturing and service industries generally require more formal education. Growth in these industries increases the returns to finishing high school and to pursuing higher education. As employers demand workers with greater skills, Kentucky should see reductions in the dropout rate. In addition, more students will pursue higher education. The Bureau of Economic Analysis estimates past—and projects future—employment and earnings by industry. These estimates appear in Tables 9.2 and 9.3. As the estimates show, the structure of Kentucky's economy and, therefore, the needs of its employers, are changing.

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[2] See Katz, L.F., Murphy, K.M. (1992, February). Changes in relative wages 1963-1987: Supply and demand factors. *Quarterly Journal of Economics, 107*, 35-78.

TABLE 9.2

Number of Jobs by Industry in Kentucky (in Thousands)

	1989	1990	1991	1992	1993	1998	2000	2005
Farm	127	125	119	122	119	118	117	115
Agricultural Services	17	19	19	19	19	23	24	27
Coal Mining	31	32	29	26	25	-	19	17
Other Mining	8	8	7	7	7	27	7	6
Construction	99	101	99	106	110	119	120	125
Manufacturing	291	295	289	293	303	312	314	217
Transport & Utilities	91	96	97	97	100	107	109	115
Wholesale & Retail	397	404	405	415	427	462	469	491
F.I.R.E.	95	97	98	97	98	103	107	111
Services	410	436	447	463	481	546	571	625
Government	298	301	306	317	316	331	335	345
All-Industry Total	1863	1913	1916	1961	2003	2146	2191	2295

Note: The numbers above represent the number of full and part time jobs rather than the number of people. An individual who works two jobs will be counted for each job.

Source: Bureau of Economic Analysis Regional Projections to 2045: Volume 1, States.

TABLE 9.3

Average Annual Earnings by Industry in Kentucky (in Dollars)

	1989	1990	1991	1992	1993	1998	2000	2005
Farm	7,372	7,022	7,363	8,342	7,483	8,403	9,142	9,852
Agricultural Services	10,706	10,389	10,591	10,765	10,764	11,342	11,496	12,074
Coal Mining	38,684	38,491	38,425	39,307	39,130	-	-	-
Other Mining	33,655	33,736	33,374	34,307	34,112	36,018	35,969	37,303
Construction	18,914	18,300	17,412	17,359	17,642	18,352	18,483	18,934
Manufacturing	25,646	25,600	25,212	26,098	25,743	27,231	27,500	28,798
Transport & Utilities	25,404	24,981	25,126	26,056	25,721	26,212	26,126	26,660
Wholesale & Retail	12,978	12,759	12,757	12,891	12,861	13,220	13,253	13,515
F.I.R.E.	15,435	15,260	15,081	16,601	17,503	18,885	19,731	21,194
Services	15,431	15,283	15,341	15,847	15,192	16,687	17,066	17,862
Government	18,873	19,026	19,567	19.934	19,777	20,558	20,905	21,635
Average Annual Earnings for State	17,510	17,360	17,339	17,834	17,754	18,476	18,725	19,400

Note: The numbers above represent the number of full and part time jobs rather than the number of people. An individual who works two jobs will be counted for each job.

Source: Bureau of Economic Analysis Regional Projections to 2045: Volume 1, States.

Mining has traditionally been a high paying industry in Kentucky. In 1993, coal miners were paid an average of $39,000 per year. Over the past few years, however, both wages and employment in the mining sector have decreased. This trend is expected to continue into the future, assuming no shocks to the economy occur that would raise the price of coal.

From 1989 to 1993, services and wholesale and retail trade have shown relatively large growth in employment. Annual earnings in these sectors have seen little growth over the same time period. While little growth is expected in earnings per employee, the number of workers employed in these industries are expected to continue to grow. Currently, services account for approximately 24 percent of the jobs in Kentucky. It is projected that the service sector will grow to account for 26 percent of Kentucky jobs by the year 2000.

Manufacturing accounts for approximately 15 percent of Kentucky jobs. Projections show that growth in manufacturing should be enough to maintain its share of Kentucky jobs. Manufacturing jobs are relatively high paying jobs, averaging just under $26,000 per year.

Other industries, such as construction, transportation, utilities, and finance, will continue to show moderate growth. Farm employment has fluctuated in past years with a general downward trend that is likely to continue into the future.

Earnings available in the job market appear to play a significant role in determining the amount of education people desire. Historically, when coal jobs paid high wages, many students in the local area dropped out of school. The benefits to graduation were not high enough to keep those students in school. The Kentucky economy, however, appears to be moving to industries and jobs that require higher levels of education. As these jobs comprise a larger share of available employment opportunities, students will find greater rewards from educational attainment.

Conclusions

Obviously, most policymakers would prefer students to stay in school. Analysis suggests that the earnings of high school graduates relative to high school dropouts are of fundamental importance in determining the student's decision about whether to drop out. With the coal boom of the 1970s, as increased value of coal increased the wages of coal miners and mining jobs were plentiful, there was a reduction in the number of students enrolling in high school in the regions with coal to mine. As the coal industry then did not generally require workers with much formal schooling, these higher wages provided an incentive to drop out of high school. This reduction in high school enrollments occurred despite rapid population growth in the areas of Kentucky with coal reserves.

In 1990, Kentucky began a major education reform initiative: The Kentucky Educational Reform Act (KERA). The analysis has two important, but related, implications for KERA. First, it is important to recognize that general economic conditions affect the decision to complete high school. Thus, KERA could be remarkably successful, but high school enrollments could decline if the earnings opportunities for high school graduates continue to decline as they have since the middle of the 1970s. Second, if KERA is going to succeed in reducing the number of dropouts in Kentucky, it is important that there be an improvement in the skills of high school students not attending college. As employment opportunities change, the Kentucky secondary school system must provide high school graduates with the skills future employers will require.

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Trends and Issues Affecting Primary and Secondary Education

While school reform has already dramatically altered the culture of education in Kentucky, the future holds daunting challenges. From the development of accurate tools of assessment to enable reliable measures of accountability, to the elevation of academic standards, to the institutionalization of participative decisionmaking processes, the work of reform continues. It will be broadly influenced by changing student and teacher demographics, by how generously we fund efforts to provide the best possible education to all children in the Commonwealth, and by how quickly we move from the framework of reform to commitment.

By Robert F. Sexton
The Prichard Committee for Academic Excellence

Stephen K. Clements
University of Chicago

Imagine that we could transport ourselves back in time, about 10 years, and receive our assignment for this essay: tell Kentucky readers about the likely directions for Kentucky education over the next five or so years. From the perspective of the mid-1980s we would have written of the possibility—not the prospect—of increasing school funding and improving educational performance so that Kentucky could climb out of the nation's educational cellar. No longer would Kentucky be 45th in per pupil expenditures or 50th in high school graduates in the population, we might have said, if the state were to make a full-fledged commitment to vastly improved schools.

We might have hoped but not predicted in 1986 that, with luck, Kentucky would eliminate nepotism in hiring, replace the politically selected state school superintendent with a commissioner responsible to the state board of education, and provide preschool experience to all its four-year-olds. We might have hoped, although we would not have predicted, that high learning standards would be established for all Kentucky students and that schools would be held accountable for helping students achieve them. In 1986, we could not have forecast the 1989 *Rose vs. Council for Better Schools* decision of the Kentucky Supreme Court. Nor would we have predicted that Kentucky educators would, in 1996, be implementing the nation's most sweeping and comprehensive attempt to increase learning for all students.

That these conditions are in place shows palpably how the education landscape and our conversations about education have changed. As a matter of course now, for instance, we think of the state school system as being led by a commissioner of education, hired as a result of a national search, and accountable to a state board. It is no longer part of our thinking that the elected superintendent of public schools will be gone every four years, using the department of education for patronage hiring and as a platform for yet another public office.

In debates over the Kentucky Education Reform Act (KERA), we have not heard anyone argue for returning to an elected state superintendent. Likewise, we have heard no serious call for eliminating high academic standards, preschool programs, family resource and youth services centers, school councils, increased school funding, or other reform components. Our educational future is thus shaped by our current policy architecture. It is also shaped by how effectively that architecture helps all Kentucky children learn.

Researchers who are studying large scale, comprehensive educational changes like Kentucky's conclude that it is terribly difficult and slow for new state policies to affect what happens in classrooms. They compare the process of implementing change to a violent storm sweeping across the ocean. We see smashing surf on the surface and perhaps some turbulence a few feet below, but at the ocean floor dead calm remains.

In *Tinkering Toward Reform*, Stanford professors Larry Cuban and David Tyack stress the need to learn from our history. They emphasize the power of the time lag between "advocacy, adoption and implementation" of educational changes. Reforms respond to problems, legislation is passed, but "implementation has a momentum and schedule of its own." Past reforms were frequently just "add ons" that "did not disturb the standard operating procedures of the schools." Those reforms which endured were "noncontroversial;" they "did not exceed the pedagogical speed limit, did not directly challenge the public's notion of what a real school ought to be doing." A real school, of course, is one that looks pretty much like those adults attended when they were children. "When educators see reform demands as inappropriate, they are skilled in finding ways to temper or evade their effects," Tyack and Cuban observe.

So Kentucky has confronted its historical educational deficiencies and is working its way toward solutions. But influencing those solutions and implementing them is very difficult work. Trends that will affect Kentucky schools are exerting influence within and outside of the educational system. We focus in this essay on a few of the most difficult educational policies being attempted. External to the educational system we concentrate on conditions that always have and always will shape public schools the most—the condition of families and school children.

Increasing Student Learning Through Accountability, Assessment

What happens over the next few years with Kentucky's new accountability and assessment system will shape Kentucky's educational future profoundly. Changing the incentives to encourage good teaching in Kentucky schools is the biggest lever available to policymakers, and Kentucky is using that lever like no other state. In 1989 and early 1990, when the reform plan that became the Kentucky Education Reform Act was germinating, many political leaders and education policy specialists here and around the country argued that accountability was the key to improving American schools. Without school accountability, they said, the public would be unwilling to accept tax increases to fund education adequately. Further, we would not know what knowledge and skills were most important for all Kentucky students and whether students were indeed learning.

They also believed, rightly, that existing standardized tests had encouraged educational malnutrition in Kentucky and across America. Proponents of an accountability-oriented reform prevailed, and the result was the creation of the Kentucky Instructional Results Information System (KIRIS) tests and portfolios to measure student performance, and a system of rewards and sanctions for schools and teachers.

Since 1990, Kentucky has been the first state to incorporate accountability, financial rewards and aid to help schools improve, sanctions for poor performance, and aid for distinguished educators into its educational program, a true "high stakes" accountability system. Numerous other states, including Vermont and California, have either recently passed or are moving forward on plans for their own high stakes assessment programs. But this has been a hazardous road, full of detours and potholes. No national tests of the sort envisioned in 1990 were available for states like Kentucky in 1990, so the Commonwealth had to develop its own.

New tests measure school performance for accountability and form the basis for financial rewards. Their purposes are to show citizens and parents how well schools are doing at their job of educating students, and to provide appropriate consequences for schools that are effective, as well as those that are not. The tests are also meant to drive instruction and curriculum. Because testing is driving instruction, and because it has real consequences for teachers, it is imperative that it be done extremely well and that it be credible.

But parents expect tests, in addition to measuring school performance, to provide individual scores *and* national comparisons for their children. The big question is whether one test can do all of this; no one knows for certain, but most experts are doubtful. The challenge Kentucky faces is being confronted all over America, as all states attempt to create high and measurable academic performance standards.

Inventing and using new assessments has been a costly, time-consuming, and somewhat error-prone process. The first round of KIRIS exams yielded decent performance instruments and reasonable baseline scores for schools. Student performance, particularly at the elementary level, has increased substantially. But scholarly reviews of the tests have revealed reliability problems, and the rhetoric of these reviews (for example, "fundamentally flawed") raised questions about KIRIS that were as damaging as the criticisms of the standardized tests that preceded.[1] (KIRIS is, incidentally, Kentucky's fourth statewide test since 1979. Those tests too, a critic said in 1986, were "seriously flawed.")

The State Board of Education has recently negotiated a new testing contract, and the next round of exams should allay many concerns raised by testing experts, teachers, and parents. However, if serious problems continue to plague the assessment system it could spell trouble for this most crucial school improvement component. The accountability system that KIRIS helps structure is an integral part of the political contract struck in the Kentucky reform package. If this system falters due to assessment troubles, the public may lose confidence in public schools and the possibility of improving them.

Several potentially serious problems lurk within this incentive structure. With regard to the reward system, little is known, either from research or from experience in other states, about how financial incentives will improve student learning. Recent research on Kentucky suggests that rewards are associated with increased teacher efficacy. But it is as yet unclear if the rewards are a cause or effect of teachers' beliefs and practices.[2] Incentive systems are, indeed, hard to construct.

Teacher reactions to rewards have also been mixed. Many teachers say that financial incentives do not motivate them, but whether this reaction is deeply held is not yet clear. Said one principal, "If rewards become part of the regular landscape, just a 'regular thing' for about 10 years, teachers' negative views will change."

> *The attitudes and behaviors of students and parents will have to change before achievement levels will rise significantly, no matter how diligently educators work to improve learning.*

The current incentive structure in Kentucky education also neglects the role of students. As we are reminded in an excellent new book edited by Susan Fuhrman and Jennifer O'Day, teachers, no matter how conscientious or motivated, have limited control over their students' responses to increased work and higher expectations.[3] And, since secondary school grades are not important for admission to most postsecondary institutions or for getting most jobs, incentives are not strong for high school students to study more diligently than before under a "reformed" regime. A successful future for improvements may well depend upon incentives for students in college admission and employment.

Certain aspects of American culture and youth culture also militate against student achievement. Laurence Steinberg and his colleagues argue that school reforms have failed largely because of factors in the community and beyond the control of schools.[4] Almost one in three parents is disengaged from his or her adolescents' education. Doing well in school is valued by only one in five youths. And only about 15 percent of the average youngster's waking hours each week is spent doing things that contribute to academic achievement. The attitudes and behaviors of students and parents will have to change before achievement levels will rise significantly, no matter how diligently educators work to improve learning.

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[1] National Education Goals Panel (NEGP). (1996). *Profile of 1994-95 state assessment systems and reported results.* Washington, DC: Author.

[2] Winograd, P., Anderman, E., Bliss, T. (1996, January). *The relationship between Kentucky's reward system and teaching attitudes toward teaching, learning, and reform.* (Policy Brief). Lexington, KY: University of Kentucky Institute for Education Reform.

[3] Fuhrman, S.H., O'Day, J.A. (1996). *Rewards and reform: Creating education incentives that work.* San Francisco: Jossey-Bass.

[4] Steinberg, L. (1996, July 11). Failure outside the classroom. *The Wall Street Journal,* p. A16.

Kentucky has based its reform on the idea that real incentives and real school accountability coupled with school flexibility, local decisionmaking, more school funding, and other helpful school programs will vastly increase learning. Five years of implementing such a dramatic change now seems just a blip in the long sweep of time. Much of what will happen in the future as a result of true school accountability depends upon changes in the larger community, the response of educators to increased demands, and the skills of those who design and study tests.

Setting Rigorous Academic Standards

Kentucky's school system has set high academic standards for students to reverse Kentucky's dismal educational record. The process of creating such standards has been less visible to the public than other reforms, although no less important. The long list of academic expectations that has been developed and rewritten several times sets high and reasonable goals for students, but is too vague to replace the traditionally prepackaged, textbook-driven curriculum teachers used before with teacher-designed curriculum. A time-consuming, collaborative process has been underway for years to develop standards-related curricular guidelines for teachers to use in the classroom, material that is linked to the KIRIS assessments.

Two points stand out in the process of setting and achieving high academic standards. First, it is crucial to continue and intensify Kentucky's standards-setting efforts if significant learning achievement gains are to be reached. This is especially true for academically disadvantaged students who often suffer when schools decide for themselves what these children can learn—usually not very much. The national standards movement has yielded curricular guidelines in several subject areas (although these are of uneven quality), but the nation has again balked at obliging states to adhere to standards set in Washington. This makes state standard-setting activities like Kentucky's much more critical. Only clearly identified, content-laden and coherent standards in all subject areas can guide good teaching, help eliminate gaps in curriculum and, in conjunction with KIRIS, drive continuous improvements aimed at measurable goals. An honest quest for such high, specific academic standards will be arduous and will take political courage and skill. Kentucky and other states have failed to develop rigorous common academic standards in the past, partly because it is difficult for citizens and teachers to agree on what is worth knowing. It has been easier for states to avoid the issue altogether, leaving standards to textbook publishers and standardized testing companies.

Second, a genuine standards-based education system will require Kentuckians to change the way they think about schools as institutions. With genuine standards in place, everyone associated with elementary and secondary schools must become more focused on what is taught and learned than on the means of teaching. A content-oriented approach will require more collegiality, cooperation, and egalitarianism among school staff—from teacher aides to college of education faculty members—than now exists. It is not clear that citizens of the Commonwealth, including those within the education establishment or the political leadership, are ready to embrace such new ideas about schooling even though improving Kentucky's education system will depend on it.

Whether or not they are ready for it, Kentucky parents, teachers, and administrators may soon be obliged to grapple with all these issues if the Kentucky Department of Education adopts the excellent recommendations offered last summer by the Kentucky Commission on High School Graduation Requirements. In its report, the Commission recognized that the current Program of Studies for high schools is badly out of sync with the new higher learning goals and academic expectations. It offered a three-prong plan for bringing them back into alignment with one another. First, the state should create a new Program of Studies designed around minimum course requirements, with the involvement of local boards, high schools and communities in developing more rigorous course requirements and tailoring the curriculum for individual schools. Second, the Commission calls for KIRIS tests to be altered so that individual high school students can receive meaningful reports on their progress and so diplomas can be granted at different levels based on demonstrated skill mastery. Third, high school transcripts should be revamped to be much more comprehensive and revealing, providing portfolios of test scores, essays, career plans, project presentations, and the like.[5]

Adopting these recommendations will require a gargantuan amount of work in high school communities across the state. But an effort of this sort, targeted at the high school level, built around high standards, accountability, strong academic programs at each site, and involving civic leaders, parents, and others into designing educational environments will be necessary if improved teaching in the early grades is not to "wash out" during the middle school and secondary years.

Site-Based Decisionmaking Councils

Kentucky's education system is now designed as a set of integrated measures and not a hodge podge of programs. The primary school program, the Support Educational Efforts in Kentucky (SEEK) funding formula, extended school services, family resource and youth services centers, and other components are all parts of a system aimed at increased student learning which is measured.

An important part of this overall design is the school-based decisionmaking councils that give teachers, parents, and administrators authority over key education matters. The school councils may have been oversold as agents of reform, but they are a tool with much potential for democratizing the education process and bringing about building-level improvements. Councils have the potential to become vehicles by which schools focus on rigorous standards and content, develop well tailored assessment systems, improve professional development, and the like. School councils could also serve as mediating institutions, brokering and directing change among school personnel, and increasing parent knowledge of and involvement in school operations.

It is still too early to pass judgment on the effectiveness of councils in Kentucky schools. Although 1,090 schools have councils, it may take several years for councils to meet the expectations set for them. The past five years should be seen as a period of mere compliance with new laws requiring councils. Only now can councils begin to focus in earnest on improving academic quality.

Our impression at this point, however, is that many councils are falling short of their primary goal, which is vastly improving student learning at the school level. According to Jane David, a researcher who has studied school-based decisionmaking extensively, much council energy has been expended on nonacademic issues, and relatively few parents in schools are involved in site-based decisionmaking work.[6]

Since councils are still fledgling institutions, we should not expect too much of them until they have had a chance to mature and develop. If they fail to ignite interest among parents or to become useful instruments for forcing improved practices and better ideas into schools, we will need to reconsider Kentucky's goals for these councils. Even if this happens, however, the terms of discussion will have been changed from the period of top-down local school management. The fact is that councils exist in law parallel to local school boards and local central office administrators. If councils are measured by the yardstick of what they do to increase student learning, then boards and central office administrators will be measured by this standard too.

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[5] Kentucky Commission on High School Graduation Requirements. (1996). *Clear connections and shared responsibility: A new approach to high school graduation requirement.* (Findings and Recommendations of the Kentucky Commission on High School Graduation Requirements). Frankfort, KY: Department of Education.

[6] David, J.L. (1994, August). *School-based decision making: Linking decisions to learning: Third-year report to the Prichard Committee*. Lexington, KY: The Prichard Committee for Academic Excellence.

Teacher Demographics and Retraining

Kentucky's teachers are absolutely central to improving Kentucky schools. But the state's 38,000 classroom teachers will, as a group, be changing over the next decade, and these changes will likely have a profound impact on education.

However, sudden or dramatic shifts in the teacher workforce are *not likely*. A recent Southern Regional Education Board (SREB) report provides the most up-to-date information on teacher demographic trends. The teaching force has remained remarkably stable for many years, with 93 to 94 percent of all teachers having worked in the classroom during the previous year, and anywhere from 4 percent to 6 percent of teachers retiring or leaving the classroom in any given year.[7] The SREB report and a separate research study found no significant increase in teacher attrition after the Kentucky Education Reform Act.[8] This is an important finding because some disgruntled teachers have referred to KERA as the "Kentucky Early Retirement Act." Rhetoric and reality conflict in this case.

> *Some disgruntled teachers have referred to KERA as the "Kentucky Early Retirement Act." Rhetoric and reality conflict in this case.*

The total teacher workforce in Kentucky, however, has grown by 8 percent since 1990, even though student enrollment has increased by only 1 percent. Projections are that teacher supply will meet demand over the coming years, so a shortage is not likely in the next 5 to 10 years.

However, school administrators report great difficulty in finding qualified and interested candidates for school principal openings, particularly for high schools. Recruiting minority teachers, especially in science and math, is also a substantial and unmet challenge.

What is most interesting here is the effect on schooling as veteran teachers, trained in a different era, retire and are replaced by more recent teacher education graduates. Newly trained teachers are more likely to practice the types of teaching and classroom organization designed to reach all children and increase learning. It is possible, therefore, that new ideas and practices will enter Kentucky schools most rapidly through attrition and replacement.

But current teachers also need to see themselves as part of a constantly changing profession and not as practitioners with skills that never need to be updated or adapted. The evolving nature of the teaching profession and the need for continuous improvement must be internalized by new teachers and promoted by policymakers. If this is not done, we risk retaining a teaching force unable to adapt to change and unable to respond to improved professional development even when it is made available.

Central to the skills of teachers is the status of professional development. Over the past few years, the professional development of teachers has been taken much more seriously. Efforts have been made to make it more useful, more intellectually demanding, and less time-killing drudgery. But building teacher capacity to help students reach higher standards is a massive undertaking that needs greater emphasis and more time. Unfortunately, polls show that while American parents believe teachers need constant retraining, they do not want professional development to take time away from the classroom. The common misconception that teachers are not working if they are not with children persists. The time available for teachers to do all that is expected of them, and for serious professional development, needs to be increased.

Whether professional development for teachers can be improved enough to significantly improve classroom practices, whether enough time can be made available, and whether it can be delivered in an effective manner remain open questions. Nor is it clear whether the training of teachers at the college level will improve across the board as much as is needed. Future improvements in student achievement, however, will clearly hinge upon whether teacher capacity is enhanced dramatically.

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[7] Southern Regional Education Board and Data and Decision Analysis, Inc. (1996, March). *Educator supply and demand in Kentucky*. Report on Phase Two.

[8] Shake, M.C., Slaton, D.B., Atwood, V.A., Hales, R.M. (1995, April). Effects of educational reform on teachers' decisions to retire. *International Journal of Educational Reform, 4*, 143-152.

Education Funding

Funding inequities among Kentucky school districts have prompted numerous school funding reform programs in the past. They also gave rise to the 1985 lawsuit that resulted in the *Rose* decision and the Kentucky Education Reform Act. Education finance issues are still crucial to the future of Kentucky schools.

Overall education funding has increased 46 percent as a result of the 1990 reform act. This is a substantial financial commitment by Kentuckians to improve education. The spending increase and the new distribution system have reduced the gap in per student spending between "wealthier" and "poorer" school districts by 52 percent.

After substantial spending growth since 1990, however, Kentucky's education budget has returned to normal growth levels. The 1996 General Assembly approved a 4 percent increase for 1996-1997 over the previous year's budget to be followed in 1997-1998 by a 3 percent increase. Much of the new money each year will be funneled into teacher salary raises, so many categories of funding within the overall education budget will see no increase or will be reduced over the next biennium. For example, staff development, extended school services, technology, distinguished educators, and textbooks will all be level-funded, so inflation will erode spending capacity in these areas.

In addition, certain programs have never been fully funded. Kentucky is still far from reaching its ambitious goals of providing preschool opportunities for all qualifying children, family resource centers to all eligible schools, distinguished educators to all schools that need them, or an adequate level of technology in every classroom. Without sufficient state funds, Kentucky also lacks a critical tool for meeting the financial needs of both its poorest and its wealthiest school districts.

The outlook for education spending beyond 1997-1998 cannot be predicted. Executive branch experts resist projecting spending beyond two- or four-year cycles, a product of limited technical capacity and the pitfalls of making the wrong projections. However, annual increases beyond the 3 percent to 5 percent range are highly unlikely. Such minimal increases will barely cover growth in salaries and fringe benefits of education personnel in Kentucky. They will not help the state maintain even current levels of service, much less move forward to higher levels so as to equalize funding and provide adequate educational opportunities for Kentucky children.

One condition is clear: Kentucky's revenue system does not produce revenue equal to growth in the economy because those sectors of the economy that have grown most vigorously in recent years (e.g., the service sector) are taxed at a lower level—if they are taxed at all—than traditional sectors of the economy. Moreover, the state's obligation for Medicare and prisons will increasingly squeeze out funding for schools and universities. Adjusting this inadequate tax system so growth is assured is imperative, as is controlling state spending for health care.

An important subplot of the education finance story involves the physical plant of Kentucky schools and the need to maintain or replace school buildings over the next decade or so. According to the federal General Accounting Office, Kentucky is in better shape than many states in terms of its school buildings, having run a comprehensive facilities program for a number of years. State and local governments in Kentucky have spent around $1.3 billion since 1986 on facilities, and Frankfort continues to spend approximately $60 million per year on capital projects for school districts.

Nevertheless, the needs for the future are staggering. One official estimate is that Kentucky has $2.7 billion in unmet education physical plant needs. Wayne Young, executive director of the Kentucky Association of School Administrators, estimates that the facilities situation in the state is nearing the point of critical mass. Many buildings are in surprisingly good shape for being 70 or 80 years old, he says. But as these older structures slip beyond the point of repair in coming years, the burden of replacing them will be great. Moreover, the price of constructing new buildings in Kentucky has increased with the passage of the prevailing wage bill in the 1996 General Assembly.

The Kentucky legislature must cope with these costs without allowing them to overwhelm the ongoing budget needs of education. Toward that end, policymakers should consider not just constructing and repairing buildings but devising ways to use facilities more efficiently.

Related to future education funding is the matter of time in school. National reports and the Prichard Committee's own report, *A Matter of Time*, emphasize that meeting higher learning standards and more effective teacher professional development cannot be achieved unless educators spend more time on these tasks and spend that time more effectively.[9] Some Kentucky school districts are creatively finding ways to "invent" more time or spend local school funds on additional days. The future will ultimately be shaped, however, by a state-level decision to support extra days of employment for teachers in the school year.

Demographics and the Condition of Children

Shifts in population within Kentucky will also play an important role in the future of education. The U.S. Department of Education has projected an increase in the total number of children in school over the next decade. Although this increase will be due primarily to the inclusion of more kindergarten students plus lower dropout rates, according to Education Secretary Richard Riley, this boomlet will nevertheless require more than $15 billion in new spending and the hiring of some 190,000 additional teachers.

In Kentucky, though, the situation is shaping up very differently. Ron Crouch and his colleagues at the Kentucky State Data Center describe the Commonwealth as being "at risk" over the next two decades because the number of school-age children here will remain steady or even decline as the number of older Kentuckians increases substantially. In 1998, Crouch reports, the number of 14-year-olds will be the lowest in 50 years. In 1950, 73,000 children were born in Kentucky; in 1994 the number was 51,000. Today only one third of all Kentucky households have school-age children. At the moment, the Kentucky economy does not appear to be producing desirable jobs at an adequate rate to attract enough new workers and young families to offset these trends, or even to retain many of our most promising young high school and college graduates.

This combination of an aging population—a significant portion of which is unskilled and undereducated—and a nonexpanding pool of school-age children could create troublesome social and political dynamics. With this demographic "inverted pyramid," as Crouch calls it, the pressures to provide social support services for older workers and retirees will become greater and the political clout of families with children may weaken. Within the context of limited state revenue, this could mean that resources are diverted from elementary and secondary schools to other education and support services. Education and training programs are crucial for Kentuckians of all ages. But shifting resources away from the basic investment in elementary and secondary schooling would not be a strategically sound approach, though the politics of demographics may encourage it.

Much of Kentucky's future will depend upon how effectively the state confronts the appalling condition of its children. According to the 1996 *KIDS COUNT Data Book*, Kentucky ranks 36th among the states in indicators of children's well-being. Kentucky has been improving in the areas of infant mortality, high school dropout rates, and the dropout unemployment rate. But the state made no improvement in the child death rate and teen birth rate, and lost ground between 1985 and 1993 in the teen violent death rate, juvenile crime, children in poverty, and families headed by a single parent.[10]

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[9] Prichard Committee for Academic Excellence. (1995, December). A matter of time: Creating high-performance schools. *Keepin' on: Five years down the road to better schools.* Lexington, KY: Author.

[10] Annie E. Casey Foundation. (1996). *KID'S COUNT Data Book.* Baltimore, MD: Author.

These trends are discouraging, especially those involving increasing numbers of impoverished children and children in single-parent households, who are far more likely to live in poverty than those in two-parent households. Children in these conditions face special barriers to becoming well educated. Nor have educators or communities determined the most effective means of ameliorating the effects of these conditions. Add to this worsening situation the unpredictable impact of national welfare reform, recently signed into law, and state policymakers will have their hands full over the next few years.

Conclusion

The conditions affecting the future of Kentucky schools that we emphasize here do not exhaust the possibilities. They are, in our judgment, those that are most compelling today; others will emerge tomorrow. Obviously, national conditions and directions will affect Kentucky, but we believe that what Kentuckians do for themselves in education will be more important than what happens nationally.

Most of the pieces of Kentucky's new education system are in place in a legal sense. Broad compliance with new laws has already taken place. Primary school organization, for example, exists in all schools where they are required. The future depends, however, on moving from compliance to commitment. Commitment means that the quality of teaching in every classroom is sufficiently high to permit every child to learn to the maximum of his or her capability—a tremendous and daunting challenge.

History is littered with educational reforms that were abandoned before they were ever implemented, before they ever reached the classroom. In 1990, historian Thomas D. Clark observed that the real work has just begun, the work of moving improved education "from the legislature to the classroom." In 1996, Kentucky finds itself on the way down this most difficult road as it moves toward genuinely improved teaching, for all students, in all of its classrooms.

> *The direction in which Kentucky is headed can overcome the educational wasteland of the past century.*

Compared to 10 years ago, Kentucky today finds itself in a remarkable, historically unique position as the center of national attention. Reform and change have become integral to the Kentucky educational system and subject to the analysis, criticism, and suggestions for improvement that would be expected to accompany any other system. The direction in which Kentucky is headed can overcome the educational wasteland of the past century. But six years after 1990, the magnitude of the challenges inherent in transforming Kentucky's schools are also more apparent. From the experience of Kentucky's educators, we know much more about these challenges. The future of education in Kentucky, whether Kentucky maintains its leadership role, and whether it educates each child well, hinges upon how effectively and how quickly these challenges are met.

The Ivory Tower Under Siege

State-supported institutions of higher education are coming under increased scrutiny as public concerns about cost and quality escalate. Tuition costs have risen dramatically in response to declining portions of revenue from the state. So too have higher education expenditures. But the revenue picture for higher education is unlikely to change dramatically, and many fear that rising tuition costs are adversely affecting access. In response, policymakers face the difficult challenge of leveraging organizational change from institutions steeped in tradition.

By Michal Smith-Mello
Kentucky Long-Term Policy Research Center

As the 21st century approaches, the path to economic opportunity is becoming steeper and more fraught with uncertainty. The guideposts of the past are no longer accurate nor reliable. Young and old, we have become acutely aware of how ephemeral even finely honed skills and the economic security they enable can be in an economy undergoing fundamental change. In this transitional economy, higher education no longer offers the comfortable assurance of a high wage job that it once did. Its absence, however, virtually assures a lifetime of low earnings. And the earnings divide along education lines is widening into a gulf.

As a consequence of today's education earnings differential in the United States, far more pragmatic concerns are eclipsing the idealistic and generally accurate perception of higher education as a life-enriching experience. Those who pay for higher education—students, parents and taxpayers—want higher returns on the rather substantial investment higher education now exacts. From the traditional college student newly graduated from high school, to the nontraditional or "new majority"[1] learner, the pursuit of higher education is increasingly driven by economic considerations. When asked to name "very important" reasons for deciding to go to college, the most frequent response (77.3 percent) among college freshmen in the fall of 1995 was "to be able to get a better job." The third most frequent response (72.3 percent) was "to be able to make more money."[2]

The rise of a more pragmatic view of higher education has opened colleges and universities around the nation to previously unthinkable scrutiny and criticism. More educated, better informed and far more demanding consumers have begun to express dissatisfaction with higher education. Today's college students, regardless of age, and their parents want both the education and the services of public schools in particular to be more firmly anchored to the real world. Not surprisingly, they also want what most U.S. consumers have come to expect—quality at a reasonable cost. But, from every indication, citizen/customers are not getting what they want. As Folger and Jones observe, "The gap between customer expectations and institutional priorities is large and growing; the public is seeking something other than what higher education wants to provide."[3] If quality is indeed measured by customer satisfaction, as U.S. business and industry have so convincingly demonstrated, higher education faces an era of dramatic restructuring.

Public opinion polls suggest that the U.S. public wants more than the incremental change it has witnessed in recent years. A national survey conducted by *The Washington Post* prior to the presidential election found voters more concerned about rising college tuition costs than about crime or the health of the economy. Nearly 60 percent of those polled expressed the belief that escalating tuition is placing a college education beyond the reach of the average American.[4] As Finn and Manno suggest, "Public regard for higher education is ebbing." An estimated 54 percent of Americans express the belief that higher education needs a "fundamental overhaul" in their state.[5]

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[1] Zemsky, R., Oedel, P. (1994). Higher education and the changing nature of the American workforce—responses, challenges and opportunities. *EQW Working Papers*, Institute for Research on Higher Education, University of Pennsylvania.

[2] American Council on Education and University of California at Los Angeles Higher Education Research Institute. (1995). The American freshman: National norms for fall 1995. As cited by The Chronicle of Higher Education.. (1996, September 2). *The Chronicle of Higher Education Almanac, 43,* 19.

[3] Folger, J., Jones, D.P. (1993, August). *Using fiscal policy to achieve state education goals.* Denver, CO: Education Commission of the States, 4.

The obstacles to change, however, are many. Some, for example, suggest that the higher education community remains generally reluctant "to perceive itself as a pathway to the workplace."[6] Part of the disconnection may be attributable to the substance behind the Ivory Tower image—relative isolation from the economic and social fray. In that relative isolation, rigid hierarchies established on frequently debunked criteria continue to inform the organizational life of most colleges and universities. The public and a legion of thoughtful critics want high quality teaching to be a top priority, but slavish adherence to a publish-or-perish dictum remains the dominant standard of quality. Too often, the research this dictum compels is devoid of original thought or broad benefit, a particularly troublesome outcome for public institutions, although private colleges have become so dependent upon government financed student aid that the line between public and private is blurring. Because institutional reward has remained essentially self-referential and consistently distanced from the actual outcomes of higher education, little has changed. As a consequence, leveraging more of what citizens want from higher education means challenging "a thousand years of tradition wrapped in a hundred years of bureaucracy."[7]

A national survey conducted by The Washington Post prior to the presidential election found voters more concerned about rising college tuition costs than about crime or the health of the economy.

Many here and around the nation argue that the obvious remedy for rising tuition and concerns about the quality of public higher education is a dramatic infusion of public money. However, recent history suggests that public coffers cannot satisfy higher education's appetite for growth. While a robust national economy may yield increased state revenues for a time, competition for those dollars is fierce. Today, California dedicates more revenue to corrections than to higher education,[8] a shift in resources that may be a harbinger of things to come in every state. Most agree that dramatic increases in allocations for higher education are unlikely at best. Instead, the "do more with less" scenario of today is unlikely to change in the foreseeable future. As an alternative to dramatic increases in funding, others conclude that states must compel systemic change from institutions of higher education through outright budget cuts or such mechanisms as outcome- or performance-based funding.

The stakes surrounding today's higher education debate are particularly high for Kentucky. Because of the changing earnings-education ratio and the relative undereducation of our population, the Commonwealth could lose rather than gain income ground in the years to come—unless we achieve a dramatic reversal of our education status. While the long-term prospects for improved educational outcomes are significantly brighter due to school reform, the benefits will not be felt for many years to come. In order to reverse a legacy of persistent poverty, net out-migration, and inadequate incomes, Kentucky must elevate the capabilities of more and more of its working-age citizens. Without 21st century skills, Kentucky cannot develop a high skills, high wage economy that will provide opportunity for the future generations in which we have invested enormous hope and resources.

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[4] Sanchez, R. (1996, September 26). College tuition rides up escalator. *The Washington Post*, p. A3.

[5] Finn, C.E. Jr. and Manno, B.V. (1996, April). American higher education: behind the emerald city's curtain. *Hudson Briefing Paper (No. 188).* Indianapolis, IN: Hudson Institute.

[6] Banta, T. (1995, May 25-27). Remarks from the National Forum on Student Preparation for College and the Workplace: State Higher Education Executive Officers and Education Commission of the States, Denver, Colorado.

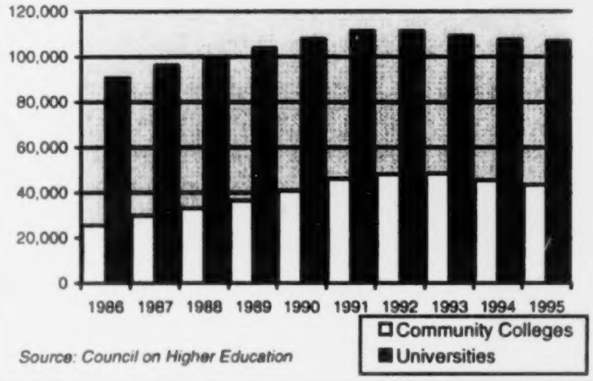
[7] Armajani, B., Heydinger, R., Hutchinson, P. (1994, January). *A model for the reinvented higher education system.* Denver, CO: State Higher Education Executive Officers and the Education Commission of the States, 1.

[8] Butterfield, F. (1995, April 12). New prisons cast shadow over higher education. *The New York Times*, p. A12.

In order to make this critical transition, Kentucky needs a highly effective, efficient system of higher education, one that provides quality—what citizen/customers need and want—at a reasonable cost. The challenge to policymakers is to leverage higher education reform without micromanaging institutions and undermining their inherent strengths. The challenge to institutions of higher education is perhaps more daunting: they must manage growth *and* change in an era of declining revenue.

Slowing Enrollment

FIGURE 11.1
Total Enrollment at State-Supported Higher Education Institutions in Kentucky, 1986-95

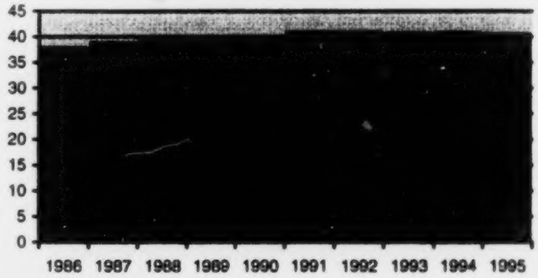


Source: Council on Higher Education

From every indication, Kentuckians, who have historically undervalued education, are responding to the demands of a changing economic context that places a premium on education. In recent years, Kentucky's state-supported system of higher education has witnessed substantial increases in enrollment, a growing proportion of which is comprised of nontraditional students or working-age Kentuckians whose education is so key to the state's future. As Figure 11.1 shows, the pace of enrollment at state-supported institutions of higher education stalled in the early 1990s, while it increased 29 percent over the 1986-1995 decade. University enrollment rose 18 percent and community college enrollment increased 71 percent, suggesting a diffuse awareness of the critical role of education in economic well-being. Kentuckians comprise 88 percent of students at state institutions of higher education.

Today, nontraditional students aged 25 and older comprise a substantial portion of the student population at Kentucky's state-supported institutions of higher education. As enrollment increased over the 1986-1995 decade, so too did nontraditional enrollment, up from 37.8 percent in 1986 to 40.5 percent in 1995. While the percentage of nontraditional students has, as illustrated in Figure 11.2, remained virtually unchanged for five years, 1993 Census data show that nontraditional enrollment in Kentucky (40.7 percent) paralleled the national rate (40.2 percent) for that year.[9]

FIGURE 11.2
Non-Traditional Students at State-Supported Institutions of Higher Education, 1986-1995
(Percent of Students Age 25 and Older)



Source: Council on Higher Education

Kentucky's nontraditional students also demonstrate remarkable persistence. Between 1986 and 1995, the number of degrees awarded to students 25 years or older increased 50 percent. According to the Council on Higher Education, nontraditional students who received degrees from community colleges increased from 54 percent of graduates in 1985-1986 to 71 percent in 1994-1995. The percentage of degrees awarded to nontraditional students at state-supported universities rose from 34 percent during the 1985-1986 academic year to 46 percent during 1994-1995.

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[9] Chronicle of Higher Education. (1996, September 2). *The Chronicle of Higher Education Almanac*, 17.

While the data on nontraditional students are encouraging, many believe that institutions of higher education can do much more to accommodate the needs of working adults. A recent national survey conducted by Washington State University with support from the University of Kentucky found that a significant majority of Americans are fully aware of their ongoing need for education and retraining; 81 percent of respondents recognize that their success at work is tied to their education.[10] What they do not find are accessible opportunities in higher education that meet their needs. Many who work full-time want courses of study that accommodate their workdays, their busy schedules, and their need to compress learning modules into shorter periods of time. In order to become more responsive to this growing customer base, institutions of higher education must schedule more classes at night, compress courses of study, create more experiential learning environments, and increase distance learning opportunities. As the survey authors note, "Teaching conducted in the traditional campus classroom will not meet the public's demand for tailored educational services."[11]

Interestingly, women in Kentucky, as well as around the nation, are more likely to take advantage of the opportunities higher education has to offer. According to the Council on Higher Education, nearly 88,000, or 58 percent of the 150,499 students enrolled in Kentucky's state-supported system of higher education in the fall of 1995, were female. This represents a gain of 2 percentage points over the 1986-1995 decade. Remarkably, 65 percent of community college students enrolled in the fall of 1995 were women, and 75 percent of all degrees conferred by community colleges during the 1994-1995 year were earned by women. Over the long term, the feminization of higher education may help close the rather substantial earnings gap that remains between men and women in Kentucky. At the same time, it may be indicative of obstacles to participation among men that should be examined and systematically addressed.

Incremental gains in minority enrollment were also made at the state's universities and community colleges. Overall, black student enrollment increased 46 percent over the course of the 1986-1995 decade, from 7,143 to 10,461 students. The portion of the student population comprised of black students increased from 6 percent of those enrolled to 7 percent, which parallels the level of black population in the state. While gains in black enrollment are clearly positive, the significant economic disadvantage that persists in black communities around the state compels concerted attention to issues affecting minority enrollment.

Significantly, higher education enrollment patterns in Kentucky have slowed somewhat in the early 1990s. While some state universities have continued to make steady incremental gains, overall enrollment at state universities and the community colleges declined slightly following a 1992-1993 peak. This downward turn in enrollment may be attributable to a diminishing population of college-age youth; the relative health of the economy, which is enabling broader participation in the workforce; the economic insecurity that nevertheless attends today's economy and discourages the risk of investment in education; and the rising cost of tuition. Regardless of the causes, a fuller understanding of the dynamics of higher education participation is critical in an era when educational attainment has become so strong a determinant of economic well-being.

Discouraging Costs?

Nationally, as well as in Kentucky, many point to skyrocketing tuition costs as a factor contributing to declining enrollments and discouraged students. Concern about tuition costs, which have outpaced and even doubled the rate of inflation in recent years, has reached its highest point in 30 years.[12] In August 1996, the U.S. General Accounting Office (GAO) reported that tuition at public, four-year colleges and universities had increased by 234 percent over a 15-year period, from 1980-1981 through 1994-1995, while household income rose at a far more anemic pace of 82 percent, and the cost of consumer goods increased by only 74 percent.[13] Over the same period in Kentucky, tuition rose 235 percent at the Universities of Kentucky and Louisville, 193 percent at the state's regional universities, and 146 percent at the community colleges.

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[10] Dillman., D.A., Christenson, J.A., Salant, P., Warner, P.D. (1995, September). What the public wants from higher education: workforce implications from a 1995 national survey. Pullman, WA: Washington State University Social & Economic Sciences Research Center, 3.

[11] Dillman, et al.

Two factors, the GAO concluded, were most responsible for tuition hikes that bore no discernible relationship to the larger economy—increased reliance on tuition as a source of revenue and rising expenditures. Nationally, per student expenditures outpaced both the consumer price index and the higher education price index (HEPI), which is thought to be a more accurate measure of the goods and services colleges must purchase. Over the period examined by the GAO, however, the HEPI accounted for only about three quarters of the 121 percent increase in per student expenditures.[14]

The GAO found that nationally the rising cost of instruction represented the largest portion (37.1 percent) of the $7,984 increase in per full-time-equivalent student costs over the period examined. In 1993-1994, faculty salaries and staff wages, which did not experience real growth until 1983, represented about 70 percent of average per student instruction costs.[15] Research (18.1 percent) consumed the second largest share of the overall cost increase, and administration consumed the third largest share (16.2 percent).[16] Nationally, the GAO found, administrative expenditures increased 131 percent or 41 percentage points more than the HEPI increased.[17]

In Kentucky, the Council on Higher Education notes in its annual statistical profile of decade-long trends in higher education that the largest increase in employment at state-supported institutions over the most recent decade was in professional nonfaculty posts which increased 53 percent at state universities and 228 percent at the community colleges between the 1986 and the 1995 fall semesters. By comparison, full-time faculty increased 12 percent at state universities and 60 percent at the community colleges. The GAO found that the rise in administrative and academic support costs is generally attributed to intensifying recruitment efforts, expanded financial aid programs, computer support, and the management of cumbersome state and federal regulations. Interestingly, the portion of overall expenditures dedicated to instruction at Kentucky's state-supported institutions actually decreased from 29 percent of total spending to 28 percent.

TABLE 11.1
Revenue by Source
Kentucky State-Supported Institutions
(in thousands)

Source of Revenue	1985-86	% of Total	1994-95	% of Total	% Increase
State General Fund	$441,149	45%	$687,183	37%	55.8%
Tuition and Fees	123,668	13%	309,382	17%	150.2%
Federal	85,729	9%	194,077	11%	126.4%
Other Agency	146,286	15%	276,264	15%	88.8%
Auxiliary/Hospital	179,338	18%	375,551	20%	109.4%
Total Revenue	**$976,170**		**$1,842,458**		**88.7%**

Source: Council on Higher Education

In effect, state-supported institutions of higher education around the nation have continued to spend at an escalating pace, even as their principal source of funding provided dwindling shares of revenue. As shown in Table 11.1, revenue for Kentucky's state-supported institutions of higher education nearly doubled over the most recent decade, while the portion of revenue provided by the state declined. Nevertheless, general fund contributions to the state's eight universities and 14 community colleges represented 14.9 percent of all state expenditures in 1994, the third largest share of the state's budget, behind elementary and secondary education

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[12] General Accounting Office (GAO). (1996, August). *Higher education: Tuition increasing faster than income and public colleges' costs.* Washington, DC: US Government Printing Office, 4.

[13] GAO, 18.

[14] GAO, 25-27.

[15] GAO, 29.

[16] GAO, 29.

[17] GAO, 30.

(47.8 percent) and health and human services (18.9 percent).[18] Over the most recent decade, funding to state universities increased $246 million or 56 percent, from $441 million in 1985-1986 to $687 million in 1994-1995. At the same time, however, expenditures by the state's publicly supported institutions of higher education increased by $808 million or 87 percent, from $962.6 million in 1985 to $1.8 billion in 1994.

The adaptive response to diminishing state responsibility for higher education revenues has been one of cost-shifting rather than cost-cutting. Declining state contributions to higher education, as the GAO notes, have resulted in a substantial shift of the cost burden for running institutions of higher education to students. As the portion of higher education revenue provided by the Kentucky state government declined, from 45 percent to 37 percent over the most recent decade, the portion of higher education revenue met by tuition and fees increased from 13 percent to 17 percent. Overall, revenue generated from tuition increased 150 percent, from $123.7 million in 1985-1986 to $309.4 million in 1994-1995. As a consequence, the ratio of general fund appropriations to tuition changed substantially. Ten years ago, the state contributed $4 for every dollar a student paid in tuition; today the state provides only about $2.50 for every student dollar.[19]

Federal dollars exclusive of student aid have also met an expanding share of higher education revenues in Kentucky, up from 9 percent in 1985-1986, to 11 percent in 1994-1995. Overall, federal funds to higher education in Kentucky rose $108,348 million or 126 percent.[20] Deeper cuts in the already slowing stream of federal funds could not only have an adverse long-term impact on revenue for Kentucky's university system but also on students, who, in the absence of organizational responses to declining revenues, would likely assume part of the added cost burden in the form of higher tuition and fees. And, were federal student loan programs to be cut, as recent congressional budget-cutting initiatives sought to do, the fiscal impact on state-supported universities would be dramatic.

Some, however, argue that federal student loan programs have effectively removed incentives for cost reductions and enabled institutions of higher education, public and private, to avoid painful restructuring.[21] Instead, institutions have simply shifted costs to students, a substantial portion of whom have ready access to federally backed loans. According to U.S. Department of Education surveys, 45.6 percent of all students at four-year public institutions in 1992-1993 reported receiving some type of financial aid.[22] An earlier study by Sutterlin and Kominski at the U.S. Bureau of the Census found that more than half (51 percent) of the nation's 1990-1991 post-secondary students received financial aid from at least one source and that the average aid package for the year stood at almost $3,000 per student.[23] While the decline these surveys suggest may be attributable to different survey methods, it also may be indicative of the level of discouragement rising tuition has engendered.

As a consequence of rising tuition, federal outlays and debt burdens are mounting to record and, some argue, unmanageable heights. Student financial aid, according to the College Board, has now reached an unbelievable $50 billion, an increasing portion of which is in long-term loans that translate into burdensome long-term debts.[24] For many, these debts must be managed during years in which earnings are low and, for young workers, declining.[25] The costs are discouraging and the consequences disturbing, suggests College Board president Donald Stewart, "A college education should help people create a better future, not a deeply mortgaged future."[26]

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[18] Schirmer, P., Childress, M.T. and Nett, C.C. (1996). *$5.8 billion and change*. Frankfort, KY: Kentucky Long-Term Policy Research Center, 10.

[19] Schirmer et al., 12.

[20] Schirmer et al.

[21] Fiske, E.B. (1995, December 12). Aftermath of easy college loans are crushing debt, higher tuition. *Lexington Herald-Leader*, p. A11.

[22] U.S. Department of Education 1992-93 Student Survey as cited by The Chronicle of Higher Education. (1996, September 2). *The Chronicle of Higher Education Almanac, 43*, 14.

[23] Sutterlin, R. and Kominski, R.A. (1994). *Dollars for scholars: Post-secondary costs and financing, 1990-1991*. Washington, DC: US Department of Commerce, 7.

[24] Sanchez, R. (1996, September 26). College tuition rides up escalator. *The Washington Post*, p. A3.

[25] Freeman, R.B. (1996, September-October). Toward an apartheid economy? *Harvard Business Review*, 116.

In addition to the substantial long-term debt that high tuition costs now exact from those who are not fortunate enough to have sufficient personal resources or affluent parents, college costs are effectively discouraging full-time participation and, thus, extending the length of time many young people attend college. Because tuition meets only a portion of actual per student costs, some states have moved to discourage longer periods of enrollment by increasing the cost of tuition to those in programs for longer than four years or by lowering credit requirements. But tuition costs, not malingering students, may be the factor that most discourages timely completion of a degree. According to the National Center for Education Statistics, an estimated 46 percent of full-time college students aged 16 to 24 work,[27] making it more difficult to manage a full course load. As students extend their length of enrollment, their debt burden mounts. Some poor students simply give up while others are so discouraged they never apply.

> *"A college education should help people create a better future, not a deeply mortgaged future."*

Today, the impact of rising tuition on access to publicly supported institutions of higher education is being broadly questioned. As Lemann observes in a *Time* magazine commentary, higher education represents opportunity to citizens, "the central American value."[28] But the dramatic rise in tuition at public universities has effectively "changed the bargain between the citizen and the state."[29] It is a particularly questionable bargain in a state where incomes lag far behind U.S. averages and frequently reside near the bottom of national economic rankings. If, as some studies suggest, the cost of tuition has reached a threshold at which it is blocking access to higher education, it is effectively inhibiting income growth, a consequence that Kentucky can ill afford.

Data released by American College Testing (ACT) in July 1996 suggest that college students are discouraged nationally. Based on institutional data it has collected since 1983, ACT found the college dropout rate had reached its highest level in 13 years while the graduation rate had fallen to its lowest level. Specifically, ACT found the freshman-to-sophomore dropout rate had risen to 26.9 percent at all institutions, up 2.5 percentage points since 1983. While the increase is largely attributable to rising dropouts from private institutions since 1993, the rate for public institutions also has been consistently higher over the years. Between 1983 and 1996, the portion of four-year college students who graduated within five years decreased from 57.5 percent to 53.3 percent.[30] ACT analysts have cited rising tuition rates as a key factor in these observed declines.

In a 1995 RAND study of California's Master Plan for higher education, Shires concludes that the state is experiencing "an access crisis" that is undermining the expressed mission of publicly supported higher education in the state.[31] Rising levels of fees, Shires finds, are routinely "pricing out students who . . . should be served by the state's higher education sector." In effect, tuition hikes are essentially thwarting the plan's established goal of providing access to all who would benefit from higher education. "Unless the price of higher education is reduced to earlier levels, the state will guarantee that a significant proportion of students will be denied access to the state's public undergraduate institutions."[32]

Clearly, access to higher education is influenced by the supply and demand factors in individual states. California faces the prospects of an exploding population and inadequate institutional capacity to meet a likely demand for higher education in the coming years. Future circumstances are likely to be quite different here in Kentucky, given recent demographic trends, flattening enrollments at public institutions, and an institutional capacity many would argue already generously exceeds demand. Only through ongoing analyses of the factors influencing enrollment and access can the state effectively assess the real impact of the status quo—rising costs to students and taxpayers.

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[26] Anonymous. (1996). $100,000.00 and still climbing. [On-line] Available: www.review.com/time/TM5bot.html.

[27] Sanchez, (1996, June 8). College sticker shock: states moving to discount anxiety. *The Washington Post*, p. A1.

[28] Lemann, N. (1996, June 10). With college for all. *Time*, 67.

[29] Lemann.

[30] ACT. (1996, July 9). *College dropout rate reaches new high, graduation rate new low* (news release), Iowa City, Iowa.

[31] Shires, M.A. (1995, January). *The master plan revisited (again): Prospects for providing access to public undergraduate education in California* (draft). Santa Monica, CA: RAND, xv.

[32] Shires, 57.

Because a college degree has remained a sound investment over the years, parents and students met the rising cost of tuition without question for a time. In the absence of external pressure, institutions were not forced to reckon forcefully with issues of cost, efficiency or productivity.[33] But recent trends suggest that the near guarantee of an earnings return and the consumer passivity it has engendered may be fading. Many parents, suggests futurist Joseph Coates, are reacting to "the 27-year-old hulking over the refrigerator," still living at home and still jobless or marginally employed in spite of substantial investment in higher education.[34] Indeed, younger workers, particularly young men, have been among the biggest losers in our economy. And between 1994 and 2005, Bureau of Labor Statistics projections suggest job openings for college graduates could fall as much as 300,000 short of the number of college graduates entering the labor force.[35] If these predictions and current trends hold, many college-educated entrants to the labor force will work in low skill jobs at low pay. And public dissatisfaction with higher education will only grow.

> *Recent trends suggest that the near guarantee of an earnings return and the consumer passivity it has engendered may be fading.*

How Much is Enough?

Analyses of Census data and state-level appropriations conducted by Illinois State University's Center for Higher Education suggest that Kentucky's appropriations to higher education are somewhat skewed in their relationship to the income capacity of the state's population. Given the significant educational ground we must close, it may, however, be far less than is needed. The Center's data show Kentucky is currently spending somewhat more for higher education than the national median across two measures. Kentucky ranked 22nd in the nation, spending an estimated $176.93 per capita or more than $3 per person above the national median ($173.37). Kentucky's population is 24th in the nation. In another capacity measure, the Commonwealth ranked 17th in the nation, spending $9.97 per $1,000 of personal income compared to a median of $8.46.[36]

Importantly, these data reflect myriad circumstances. They are indicative of the relative importance given to higher education in a state, the state's population and its wealth. Among those states spending above the median for higher education based on per capita income are some of the nation's poorest (Arkansas, Mississippi, New Mexico, and West Virginia), least populated (Hawaii and Delaware), and most committed to higher education. North Carolina, for example, ranks fifth in appropriations per capita and sixth in spending per $1,000 in personal income, an investment few would argue has not proven its worth. Conversely, states spending the least per capita tend to be populous, high-income states though there are exceptions. Consequently, it is difficult to generalize about higher education spending relative to the capacity of a state's population.

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[33] Finn and Manno, 5.

[34] Coates, J. (1996, July 14-17). Presentation at Future Vision, the Annual Conference of the World Future Society, Washington, DC.

[35] Shelley, K.J. (1996, Summer). 1994-2005: Lots of college-level jobs—but not for all graduates. *Occupational Outlook Quarterly*. Washington, DC: US Department of Labor, 8.

[36] Center for Higher Education, Illinois State University. (1996). Table 7, Rankings of the States on Appropriations of State Tax Funds for Operating Expenses of Higher Education per Capita and per $1,000 Personal Income, FY 95-96. *Grapevine*, 13.

However, because we are spending beyond the capacity of our population, questions of quality—what Kentuckians are getting for this substantial investment—beg to be addressed. Many argue that the Commonwealth has created far too many institutions with separate, costly and competitive administrations at the expense of quality. The state's doctoral institutions, the University of Kentucky and the University of Louisville, it is argued, have been hindered in their development due to the drain on resources. Conversely, others, including representatives of regional institutions, argue that both universities have failed to achieve programmatic excellence in spite of receiving the lion's share of resources. While quality is measured differently by different entities, how public money is spent and what taxpayers get for the substantial investment they make in higher education are questions that compel the attention of policymakers.

Leveraging Organizational Change

Clearly, the higher education community is experiencing unprecedented political pressure for fundamental change. Here in Kentucky, the Governor has made higher education reform a central focus of his administration. In response, political positions and turf are already being carefully staked. Some argue that the community colleges should be severed from the University of Kentucky and reoriented to achieve a stronger focus on workplace skills. Others view Kentucky's entire system of higher education as top-heavy and overextended, consuming too much revenue for duplicative programs and for territorial institutional expansion in a state that is poor by virtually every traditional measure. As a result, it is argued, resources are diluted, and no institution has the capacity to achieve real excellence. In turn, the social and economic development that a premiere institution might enable remain illusive. In short, Rollin J. Watson, President of Somerset Community College asserts, "Kentucky does not need and cannot afford eight universities."[37]

Certainly, anticipated gains for higher education over the coming biennium will not close lost fiscal ground, and the future is unlikely to yield significant increases in public outlays. In an exploration of the impact of larger trends on the state's budget, Schirmer, Childress and Nett find that in order to maintain the *present* quality of state programs, expenditures will exceed revenues within a few short years, resulting in a structural deficit.[38] Consequently, it is unlikely that Kentucky will achieve improvements in higher education through increased expenditures.

The logical response to mounting fiscal pressures and public demands for change is for institutions of higher education to engage in systemic, organizational change. Higher education may be "years away from knowing what academic versions of TQM (Total Quality Management) will appropriately look like,"[39] as Marchese suggested in 1993, but the urgency that propels it appears to have arrived. The values of processes like TQM offer a solid foundation on which institutionally unique initiatives can be developed. Arguably, adoption of the ethic of continuous improvement alone would dramatically alter higher education. Equally important, however, are the critical goals of reorienting higher education institutions toward their "customers"—students, working adults, businesses, and the public in general—and tapping the full potential of critical human resources, of faculty and staff, who, given the authority to do so, can help shape a more responsive, more efficient system of management and instruction. The ideal outcome, Marchese suggests, is "to remake organizations so they become more focused, disciplined, quick-footed, humane, and competitive."[40]

Ironically, the push to cultivate "learning organizations" in the private sector also offers an important *and* a new focus for many institutions of higher education. As Garvin suggests, a learning organization is "skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights."[41] The stringent test Garvin poses for a learning organization is that of "changing the way work gets done." Too often, tradition-laden universities and colleges simply would not pass.

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[37] Watson, R.J. (1996, October 30). Joining the branches of higher education. *Lexington Herald-Leader*, p. A9.
[38] Schirmer et al.
[39] Marchese, T. (1993, May-June). TQM: A time for ideas. *Change, 25*, 10.
[40] Marchese.
[41] Garvin, D.C. (1993, July/August). Building a learning organization. *Harvard Business Review*, 80.

For state policymakers, the central questions around higher education are those of how much external pressure will be required to spur systemic change within the higher education community, and what, if anything, policymakers can do to leverage it sooner as opposed to later. Some states have exerted pressure by making dramatic, across-the-board cuts, rather than adopting the prevailing incremental approach. Others, like Kentucky, have put performance standards in place, but because the bottom-line stakes are negligible, they do not appear to be spurring dramatic change in any state. Regardless of the impetus, broad-based institutional commitment to organizational change is arguably the only viable response to new fiscal realities and rising citizen dissatisfaction. Policymakers face the difficult challenge of encouraging and rewarding such fundamental change in the long-term interests of citizens of the Commonwealth.

Conclusion

Clearly, citizen dissatisfaction with the cost and the quality of higher education is creating unprecedented pressure for fundamental change on campuses around the nation. As a consequence, policymakers here and in many states have begun to probe higher education expenditures, policies and practices, and to experiment broadly in an effort to leverage fundamental change. But reforming higher education may be the most difficult political challenge before policymakers. While frequently cautioned about the error of attempting to micromanage higher education institutions, policymakers are simultaneously told that higher education is perhaps the least prepared of all public institutions to manage restructuring and change. Consequently, balancing the interests of citizens with those of institutions poses a formidable challenge.

Indeed, the recent history of higher education has been one of expansion and growth, even in the face of dwindling shares of revenue from state governments. Though the growth in higher education expenditures is attributable to rising enrollment, many argue that the time has come for higher education to do more with less and to do things far differently. Among other things, they point to the drift of higher education expenditures toward a range of nonacademic student amenities, to bloated administrations, to costly remedial help for poorly prepared students, and to senior faculty who teach few courses and produce little meaningful research.

Importantly, engagement in organizational change could prove to be a revolutionary boon for higher education, creating whole new markets and enlivening the education process as never before. Indeed, studies show that interactive computer learning not only enables students to retain more information but to learn more quickly.[42] Outcomes, however, will ultimately depend on the energy and the sincerity of commitment institutions bring to the challenge. It is one of containing costs, of capturing higher levels of efficiency and productivity from faculty and staff, of unleashing the considerable talents of those on the frontlines of higher education, of streamlining management processes, of becoming far more sensitive to the needs of customers, of securing real returns from investments in technology, and of improving competitive position in ways that matter to students and citizens.[43] In short, cost and quality matter a great deal, even at the top of the Ivory Tower. Until these fundamental issues are systematically addressed, the current climate is unlikely to change for higher education.

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[42] Oblinger, D.G. (n.d.). Transforming the academy to improve delivery of services: redesign for reallocation. [On-line] Available: ike.engr.washington.edu/news/whitep/technote/hied/oblinger.txt

[43] Oblinger.

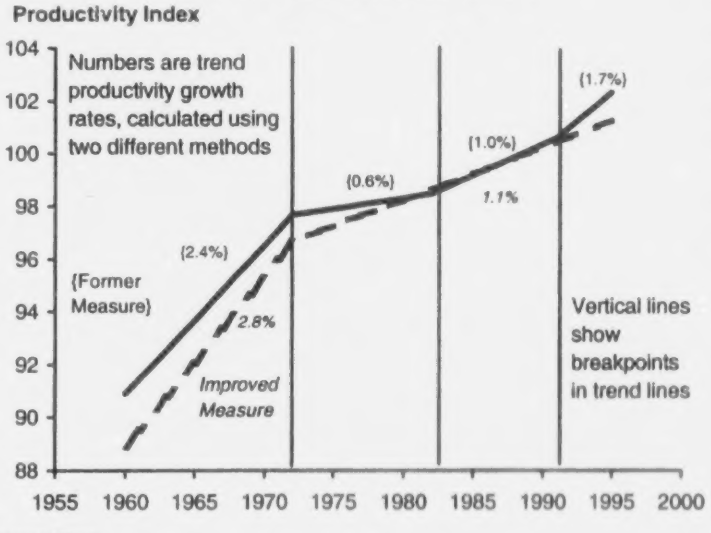
Workforce Training Issues

The importance of a skilled and highly educated workforce to economic well-being is widely recognized, and the relationship between skills and income is becoming stronger over time. Largely as a result of growing demand for skilled workers, state-level training programs are becoming increasingly important as complements to federal programs. Although the demand for workers with a bachelor's degree or more is growing rapidly, many future workers will not attend college and will require other types of training. Cost-sharing for worker training and improved communication between businesses and students will help facilitate the transition from school to work. The needs of older workers are also important, as the relative size of the workforce aged 45-64 will grow. Finally, small and rural firms may need some special assistance in modernizing, because the difficulty of finding highly trained workers may preclude investment in advanced technology.

By Stephan J. Goetz
University of Kentucky

The nation's concern over workforce training is succinctly summarized by the title of a 1990 report from the National Center on Education and the Economy, *America's Choice: High Skills or Low Wages!* The importance of a skilled and highly educated workforce to economic well-being is widely recognized, and the relationship between skills and income is becoming stronger over time as firms shift from Taylorist modes of production to high-performance workplaces.[1]

FIGURE 12.1
Changes in Worker Productivity By Two Measures, 1960-1995



Source: Filardo

Growth in labor productivity, defined as an increase in output per worker, is a key measure of economic well-being, as it in principle leads to more rapid real income growth and higher standards of living in the long-term. However, considerable controversy surrounds the questions of how to *measure* productivity, and whether more widespread use of computers since the early 1990s has raised worker productivity. Conventional calculations suggest worker productivity increased more rapidly after 1990, by 1.7 annually, following two decades of lackluster growth (Figure 12.1). However, an improved method of calculating the index, which will be used in future official calculations by the Bureau of Economic Analysis, reveals a different picture.[2] This improved measure, which takes into account annual output price changes, reveals that average productivity has grown by only 1.1 annually since 1973, suggesting effects of computers on *average* (economy-wide) labor productivity growth have been limited. At the same time, earnings of individuals with higher skills and advanced training have been increasing relative to the earnings of individuals with fewer skills and less training. Thus, the premium paid to workers with more training has been rising over time.

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[1] DeYoung offers the opposite interpretation: "There is the argument that our state-wide economic woes are primarily due to poor education. As an educator, I would argue the reverse: Kentucky schools are comparatively poor because we have historically not had the sort of industry and leadership to provide good schools . . . I believe that better jobs will bring about better schools." See DeYoung, A. (1994, Spring). Whose KERA is it anyway? *Across the ridge*. Lexington, KY: University of Kentucky Appalachian Center. p. 4. For a related discussion about the interdependence between investment in education and economic growth, see Goetz, S.J. (1993, December). Human capital and rural labor issues. *American Journal of Agricultural Economics, 75,* 1164-1168.

State-Level Responses

Not surprisingly, while the availability of low cost labor was the primary locational criterion for many firms in 1980, according to one survey, that criterion had fallen to fifth place in the early 1990s. It was replaced by the availability of a well qualified and highly productive work-force as the top criterion.[3] Largely as a result of growing demand for skilled workers, combined with declining federal involvement, state-level training programs are becoming increasingly important as complements to federal programs such as JTPA or JOBS.[4]

State-level training programs can provide custom-tailored and flexible training alternatives for local economic development. A 1990 survey by the National Center for Research in Vocational Education found that 47 states had at least one worker training program created and funded by state government. Some programs had been created as recently as the late 1980s. Others, particularly in the South, had begun as early as the 1960s, although many were established in the 1980s.[5]

State training and technical assistance programs are losing their traditional roles of serving primarily for industrial recruitment purposes. Instead, they are also used to retain and expand existing businesses, by allowing local firms to become more competitive.[6] Training programs vary as to which firms are eligible, how much is spent and from each source, and how, by whom and for how long the training is provided and the services offered. Southern states generally provide direct training to firms, rather than compensate firms that provide their own training.[7]

Under "third wave" economic development principles, firms are increasingly asked to share the cost of job training (as well as other state-provided services) as evidence that the service is needed.[8] Referring to potential new firms as "customers" of state government services, Mattoon writes, "[f]undamental to third wave principles is to make certain that customer demand drives program design and objectives."[9] The requirement that firms share in the cost of providing training ensures that programs are discontinued once they are no longer needed. At the same time, Bartik no longer lists industrial training programs under his "new wave" economic development policies, replacing them instead with *entrepreneurial* training programs.[10]

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[2] Filardo, A.J. (1995, Fourth Quarter). Has the productivity trend steepened in the 1990s? *Economic Review (from the Federal Reserve Bank of Kansas City), 80,* 41-59.

[3] Lyne, J., Venable, T. (1992, October). IDRC's Palm Desert World Congress: Work-force focus draws record-setting attendance. *Site Selection*, 74-80.

[4] JTPA is the Job Training Partnership Act; JOBS is the Job Opportunities and Basic Skills training program. According to LaLonde, 900,000 economically disadvantaged individuals receive services worth $2.6 billion under the JTPA, while 200,000 dislocated workers receive $275 million (152). The JOBS program annually helps 100,000 individuals in job searches and encourages vocational or remedial training, with annual spending of about $16,000 per participant or total spending of $1.7 billion (*op. cit.*, 151).

[5] McDonnell, L.M., Zellman, G.L. (1993). *Education and training for work in the fifty states: A compendium of state policies* (N-3560-NCRVE/UCB). Berkeley, CA: University of California at Berkeley, National Center for Research in Vocational Education.

[6] Otto, D., Morse, G. & Hagey, E. (1990). State educational/technical assistance programs. In B.W. Morse (Ed.). *The retention and expansion of existing businesses* (Chapter 3). Ames, IO: Iowa State University Press.

[7] McDonnell and Zellman. *Education and training for work in the fifty states: A compendium of state policies.*

[8] The Corporation for Enterprise Development describes the first wave as industrial recruitment, prevalent in the 1950s through 1970s, and the second wave as focusing on home-grown, grassroots economic development. In the third wave, emphasis is placed on the state and local organizations and agencies which carry out economic activity (see also Mattoon 12).

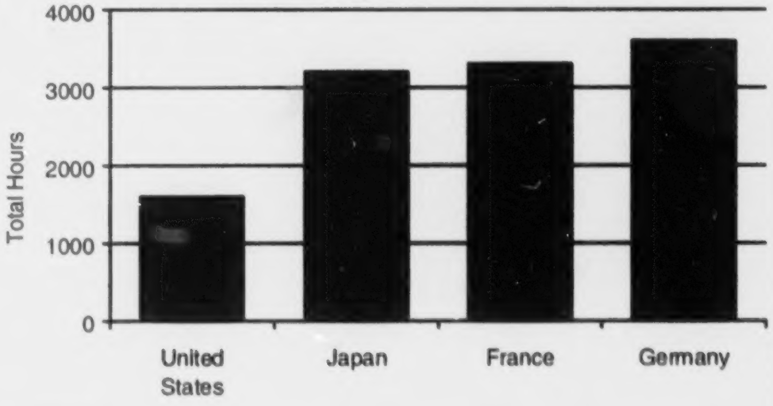
[9] Mattoon, R.H. (1993, May/June). Economic development policy in the 1990s—Are state economic development agencies ready? *Economic Perspectives (from the Federal Reserve Bank of Chicago),* 11-23.

Workforce Preparation

The School-to-Work Transition. The American primary and secondary educational system is coming under increasing criticism for inadequately preparing students for employment. Critics argue that the system holds constant time spent in school by each pupil (12 years), instead of assuring that all pupils meet the same external standards of accomplishment.[11] International comparisons suggest that, for each hour spent by U.S. high school students on core academic subjects, Japanese, French and German students spend more than two hours (Figure 12.2).[12,13]

Also germane to this issue is the fact that 20.4 percent of U.S. children were living in poverty in the mid-1980s, compared with only 4.6 percent in France and 2.8 percent in Germany.[14] Goetz and Debertin found a strong negative correlation between poverty rates and high school test scores in Kentucky: Districts with high poverty rates continue to have lower test scores than districts with low poverty rates, despite significant increases in funding to districts with low incomes and property wealth under KERA.[15]

FIGURE 12.2
Estimated Number of Hours High School Students Spend on Core Academic Subjects



Source: Connor

At the risk of perhaps oversimplifying a complex problem, Bishop provides the following explanations for a lack of learning in schools:

- Easy and entertaining courses drive out rigorous courses
- Peer group norms oppose academic learning
- Teachers become judges instead of mentors
- Standards changes are invisible to colleges and employers
- No labor market reward for high school achievement[16]

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[10] Bartik, T. (1991). *Who benefits from state and local economic development policies?* Kalamazoo, MI: W.E. Uphohn Institute for Employment Research.

[11] Tucker, M.S. (1996). Skills standards, qualification systems, and the American workforce. In L.B. Resnick and J.G. Witt (Eds.), *Linking school and work: Roles for standards and assessment* (pp. 23-51). San Francisco, CA: Jossey-Bass Publishers.

[12] National Commission of Time and Learning, as cited by Connor, E. (1995, October). Global competition: Will our human resources measure up? *HR Focus, 72*, 22-23.

[13] Bracey cautions that international comparisons of student performance often portray U.S. schools in an unduly negative manner.

[14] Economic Policy Institute, as cited by Connor. Global competition: Will our human resources measure up?

[15] Goetz, S.J., Debertin, D.L. (1996). Local economic conditions and KERA. *1996 Kentucky Annual Economic Report*. Lexington, KY: University of Kentucky, Center for Business and Economic Research.

[16] Bishop, J.H. (1996). Signaling the competencies of high school students to employers. In L.B. Resnick and J.G. Witt (Eds.), *Linking school and work: Roles for standards and assessment* (Chapter 4). San Francisco, CA: Jossey-Bass Publishers. pp. 82-90.

The latter point also includes the fact that no information is provided to potential employers about students' work habits, rates of absenteeism or problems with the legal system.

Consequently, numerous observers argue that while public high schools more or less adequately prepare the 25 percent or so of students who eventually graduate from college, the 50 percent who do not enter selective postsecondary institutions have little incentive to perform well in school, and are not served well by the present educational system.[17,18] These observers also maintain that the high school diploma provides no information to potential employers other than the fact that the holder had the perseverance to attend 12 years of public school.[19,20] Bishop relates the experience of Nationwide Insurance in 1982, when it requested transcripts from high schools in Columbus, Ohio, to illustrate the limited value of high school experience in sorting students.[21] Only 93 transcripts were received in response to over 1,200 requests, even though students had permitted schools to mail the transcripts and federal legislation *requires* schools to comply with requests in such cases.

This example of poor collaboration between business and high schools stands in sharp contrast to Japanese practices. In Japan, larger firms work closely with local schools to identify promising graduates and these firms interact with schools in much the same way as with other input suppliers, continuously seeking to improve the quality of the inputs or resources employed. In the United States, many of the high school graduates or dropouts seeking to directly enter the labor force flounder for up to 10 years in low skill, minimum wage jobs to gain the experience and work habits demanded by employers willing and able to pay higher wages for longer term, "adult jobs."[22]

The system of school-to-work transition for adolescents who are not college-bound is considerably less formalized and effective in the United States than in Europe and Japan, despite a long history of federal legislation designed to improve the workforce readiness of adolescents and the articulation of labor supply and demand.[23] The southern states of Florida, Georgia, Mississippi, South Carolina, Tennessee and Virginia recently used the Jobs for America's Graduates program to raise high school completion rates and improve the employment prospects of disadvantaged youth.[24] However, many federal programs, particularly those targeted at the disadvantaged, are criticized because they "do not integrate their participants into the economic mainstream."[25,26] Furthermore, the programs are sometimes viewed as welfare projects for the poor rather than genuine job training opportunities.[27]

The recently passed School-to-Work Opportunities Act "provides an incentive for states and localities to establish better relationships between education and business as well as within the educational system."[28] This legislation attempts to solve training problems facing young workers while they are still teenagers, rather than redressing problems only after the workers have drifted

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[17] Smith, H. (1996, April). Is America shorting its students? *Vocational Education Journal, 71,* 28-31.

[18] Glasmeier, A.K., Conroy, M.E. (1993). *Global squeeze on rural America: Opportunities, Threats, and Challenges from NAFTA, GATT, and Processes of Globalization.* Pennsylvania State University, Institute for Policy Research and Evaluation.

[19] Baily, M.N., Burtless, G., Litan, R.E. (1993). Growth with equity: Economic policymaking for the next century. Washington, D.C.: Brookings Institution.

[20] Wirth, A.G. (1992). *Education and work for the year 2000: Choices we face.* San Francisco, CA: Jossey-Bass Publishers.

[21] Bishop. Signaling the competencies of high school students to employers.

[22] Osterman, P. (1994, Autumn). The great American job hunt: Getting started. *Wilson Quarterly,* 46-55.

[23] Barnow, B.S. (1993, Summer). Thirty years of changing federal, state, and local relationships in employment and training programs. *Publius: The Journal of Federalism, 23,* 75-94.

[24] Southern Growth Policies Board. (1993). Measure by measure the South will lead the nation (Final report of the 1992 Commission on the Future of the South). Research Triangle Park, NC: Author.

[25] LaLonde, R.J. (1995, Spring). The promise of public sector-sponsored training programs. *Journal of Economic Perspectives, 9,* 149-168. p. 165.

[26] See also Doeringer, P.B. (1994). Can the U.S. system of workplace training survive global competition? In S. Asefa and W.C. Huang (Eds.), *Human capital and economic development* (pp. 91-107). Kalamazoo, MI: Upjohn Institute for Employment Research.

[27] For example, Buechtemann, C.F., Schupp, J., Soloff, D. (1993). Roads to work: School-to-work transition patterns in Germany and the United States. *Industrial Relations Journal, 24,* 97-111.

[28] Bragg, D.D., Hamm, R.E. (1995, August/September). The opportunities for school-to-work: A national study of work-based learning in U.S. community colleges. *Community College Journal, 65,* 39-44. p. 40.

between minimum wage jobs. Even so, some groups in the U.S. believe that a formalized school-to-work transition system is incompatible with a free enterprise economy and that federal legislation such as the CAREERS Act leads to a "government-controlled and managed national system for human resources development."[29] Also, Hollenbeck writes that "[m]ost economists who have reviewed these [school-to-work] programs [to facilitate youth employment and learning] sense that the benefits in the form of student productivity and potential reduced hiring costs do not offset the program costs,"[30] suggesting there are no easy solutions to the problem of facilitating the metamorphosis of young adults into productive employees.

At the same time, growing emphasis on worker skills and high performance in the workplace is increasing pressure on schools to supply graduates who have mastered basic academic skills similar to those mastered by graduates in other industrialized countries.[31] Tucker envisions the creation of a three-tiered skills standard system, ranging from standards for highly specific jobs (tier III) to standards for "groups or clusters of occupations requiring broadly similar skills" in tier II, and tier I standards "for what everyone in the society ought to know and be able to do to be successful at work, as a citizen, and as a family member." The latter would include a "deep understanding of the core subjects in the curriculum...[and]...the generic skills needed in high-performance work environments."[32]

Private Sector Training Efforts. U.S. firms spend notoriously little on advanced worker training relative to other industrialized countries.[33,34,35] One reason is the potential for "pirating" of trained workers by other firms. Large German and other European firms, in contrast, allocate considerable resources to apprenticeships, recognizing that society as a whole may be better off as a result, even if the firm providing the training is unable to retain the trained worker.[36] European governments are also experimenting with other schemes to reduce the incidence of pirating. For example, Gitter describes a levy-grant system of corporate taxes designed to permit public funding of worker training.[37]

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[29] Ivins, M. (1996, April 9). Conservative critics derailing practical work-training reform. *Lexington Herald-Leader*, p. A11.

[30] Hollenbeck, K. (1996, Spring). School-to-work programs to facilitate youth employment and learning. Employment Research. Kalamazoo, MI: Uphohn Institute for Employment Research. p. 3.

[31] For example, Toch, T. (1996, April 1). The case for tough standards. *U.S. News & World Report*, 52-56.

[32] Tucker, M.S. Skills standards, qualification systems, and the American workforce. pp. 31-32.

[33] Marshall, R., Tucker, M. (1992, October). Building a smarter work force. *Technology Review*, 52-60.

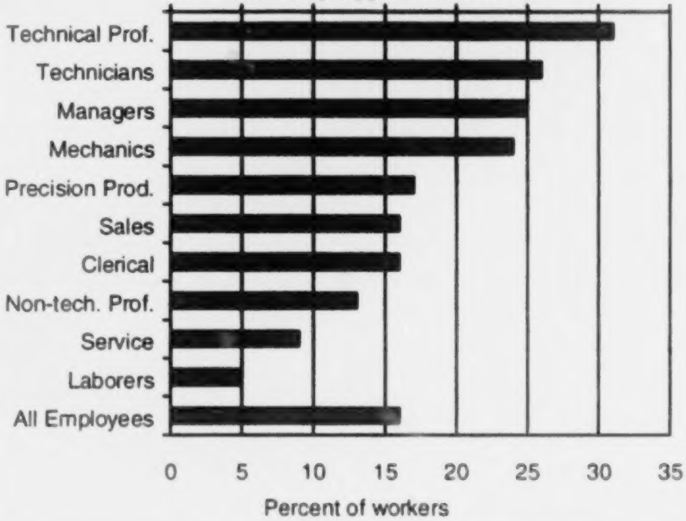
[34] Bartel, A.P. (1994). Workplace training in the United States: Is it underproduced? In S. Asefa and W.C. Huang (Eds.), *Human capital and economic development* (pp. 109-125). Kalamazoo, MI: Upjohn Institute for Employment Research.

[35] Eisen, P. (1993, October). A new game plan for American workers. *Vocational Education Journal, 68*, 18 ff.

[36] The German apprenticeship system is not without problems. Presently, fewer and fewer adolescents are pursuing that particular training path, electing instead to enroll in universities and colleges. In addition, the system is expensive, contributing to the high cost of labor in that country. For related discussions see McKenny, M. (1996, February 29). German system of apprentices is costly, creates a work force caste. *Lexington Herald-Leader*. p. A13; and Bailey, T. (1991, March). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher, 20*, 11-20; and Hamilton, S.F. (1993, April). Prospects for an American-style youth apprenticeship system. *Educational Researcher, 22*, 11-16. Cantor, J.A. (1995). Apprenticeships link community-technical colleges and business and industry for workforce training. *Community college Journal of Research and Practice, 19*, 47-71. provides a more favorable assessment of apprenticeships.

[37] Gitter, R.J. (1992, April). Job training in Europe: Lessons from abroad. *Monthly Labor Review, 115*, 25-29.

FIGURE 12.3
Percent of Workers Receiving Training in U.S. Firms, by Type of Worker



A related peculiarity is the fact that when U.S. companies do train employees, they focus more on workers who have already acquired relatively more skills and education (Figure 12.3).[38] A vice president for the American Society for Training and Development expresses concern about the short-sighted view of training as a cost rather than an investment by U.S. firms and the resulting lack of training: "Because new technology and new products can be easily copied within three to six months . . . the only ongoing competitive edge any company in any country has is its workforce."[39] Skills of current and potential employees most in need of enhancement according to one survey include written communication (65 of 455 companies responding); interpersonal communications (62); customer service (59); basic computer (49); relevant technical (41); organizational (35) and cross-cultural (28).[40]

Historically, apprenticeship training has not been important in preparing American workers for employment. The rate of apprentices per 1,000 workers in the labor force has decreased to under 2.5 in 1992 since 1949, when the rate peaked at 3.8.[41] The apprenticeship system has also historically not attracted large numbers of minorities and women trainees, who are forecast to constitute a large share of new entrants into the labor force by the year 2000.[42] Kentucky ranked 43rd out of 50 states in 1991 in apprenticeships per worker and experienced a decline of almost 5 in the number of positions between 1987 and 1991. Fewer than 2 of all high school graduates now receive apprenticeship training; moreover, they represent only 0.2 of the U.S. workforce.[43,44] McDonalds Corp., which employs more than one in ten teenagers nationwide, recently initiated an apprenticeship program, "not to consign kids to fast-food or other low level careers but to make the workplaces they're already in as learning-oriented as possible. Students may choose to aim for management careers in food services or they may use the skills they've learned as a stepping stone to other careers."[45]

Work-based learning (WBL) programs are relatively new strategies designed to improve school-to-work transitions. They can be defined as:

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[38] Based on American Society for Training and Development data, as cited by Connor. Global competition: Will our human resources measure up?

[39] Quoted in Connor. Global competition: Will our human resources measure up?

[40] Olsten Forum on Human Resource Trends, as cited by New workforce requires new priorities. (1992, January). *HR Focus, 69*, 13.

[41] Bureau of Apprenticeship Training. (n.d.). *National apprentice and program data*. Mimeograph.

[42] Johnston, W.B., Packer, A.E. (1987, June). *Workforce 2000: Work and workers for the twenty-first century*. Indianapolis, IN: Hudson Institute.

[43] Baily et al. Growth with equity: Economic policymaking for the next century.

[44] Buechtemann et al. Roads to work: School-to-work transition patterns in Germany and the United States.

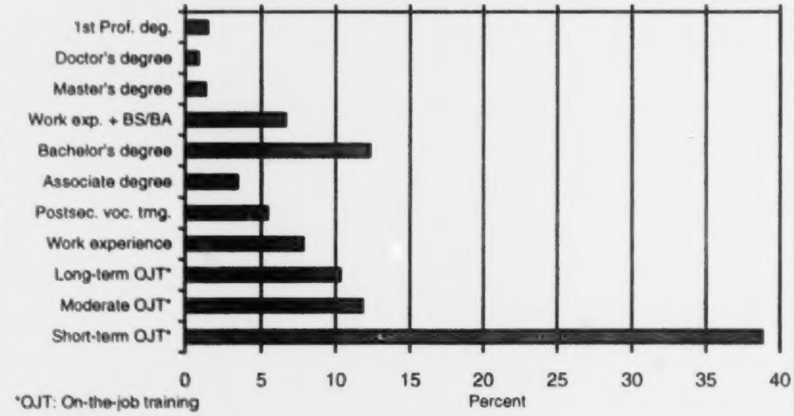
[45] Stone, J.R. (1996, February). When opportunity flees. *Vocational Education Journal, 71*, 26 ff. p. 58.

> *. . . instructional programs that deliberately use the workplace as a site for student learning. Work-based learning programs are formal, structured, and strategically organized by instructional staff, employers, and sometimes other groups to link learning in the workplace to students' college-based learning experiences. Work-based learning programs have formal instructional plans that directly relate students' work-based learning activities to their career goals . . . Instructional programs that involve youth apprenticeships, clinical experiences, school-based enterprises, and formal registered apprenticeships are examples of work-based learning programs.*[46]

Alternatively, Hoerner defines WBL programs as "[t]he knowledge/learning imparted to every student from the beginning of schooling that maintains a theme or focus that people work in order to live and that there is a positive 'connectedness' between the schooling process and productive lives."[47] Already, numerous examples of formal and informal collaborative arrangements, designed to improve the transition of young workers into the workplace, exist between private businesses and public schools including the Louisville Education and Employment Partnership.[48] But, the number of students involved remains small,[49] and many programs tend to be superficial.[50]

Conclusion. The general conclusion from this discussion is that the free market system has difficulty articulating the supply of and demand for the specific types of skills needed by the workers who do not eventually graduate from college. Lack of information, which in turn leads to high transaction costs between buyers and sellers (in this case of labor services), is a classic reason why markets sometimes fail to allocate resources effectively. This appears to be the case here too: employers are unable to size up high school graduates because of the unreliable information conveyed by a diploma, and high school graduates have limited knowledge of employers' expectations in terms of the skills they need to possess. The problem also has elements of a Catch-22 situation: firms fail to adopt new, productivity-enhancing technologies because skilled workers are not available, and workers do not invest in the skills because firms fail to adopt the technologies. Thus, it is common for newspapers to write about employers unable to find skilled and qualified workers in the local labor market, even in the presence of high local unemployment rates.

FIGURE 12.4
Projected Employment by Education & Training, Year 2005



*OJT: On-the-job training

Source: Bureau of Labor Statistics

Future Training Needs

Krugman cautions that "technological advance . . . does not always increase the need for skilled labor"[51] and other writers predict that—at least nationwide—the supply of college graduates may outstrip the demand for such workers, particularly in certain areas such as advanced technical training.[52,53] This leads to the question: what are future training needs for the workforce? One answer to this question is provided by the Bureau of Labor Statistics (BLS), which attempts to forecast growth of the workforce by education and training category (Figure 12.4).[54] According to these estimates, 60.9 percent out of the 145 million estimated total jobs in the year 2005 will require some form of on-the-job training, down from 62.7 percent of all jobs in 1994. Nearly two out of five jobs in the year 2005 will require only short-term on-the-job training. The relative demand for employees with postsecondary vocational training is forecast to decline by 0.2 percentage points (from 5.6 to 5.4), while the demand for employees having only work experience is expected to drop by 0.1 percentage points (from 7.9 to 7.8).

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[46] Bragg and Hamm. The opportunities for school-to-work: A national study of work-based learning in U.S. community colleges. p. 41.

[47] Hoerner, J.L. (1995, November/December). Education for a new ERA. *Vocational Education Journal, 70,* 22-24. p. 23.

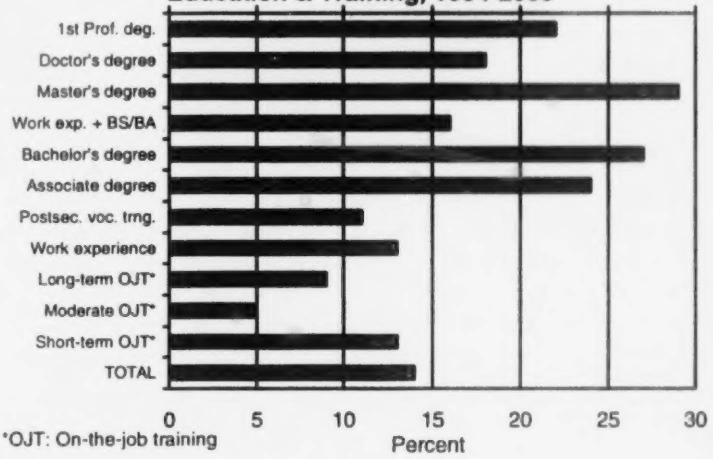
[48] Quid pro quo. (1994, May). *Vocational Education Journal, 69,* 22 ff. p. 23.

[49] Vo, C-D.H. (1996, February). Selling self-interest. *Vocational Education Journal, 71,* 22-25.

[50] Clark, D.M. (1996, January). Industry-education collaboration that works. *Education Digest, 61,* 60-63.

[51] Krugman, P. (1994, Autumn). Technology's revenge. *Wilson Quarterly,* 56-64. p. 63.

FIGURE 12.5
Projected Employment Growth by Education & Training, 1994-2005



*OJT: On-the-job training

Source: Bureau of Labor Statistics

Another way of analyzing these numbers is to calculate for each educational attainment category the expected relative increase in employment numbers due to job growth (Figure 12.5). This analysis shows that the demand for individuals with Master's degrees (29) is expected to grow most rapidly in relative terms, followed by Bachelor's (27) and Associate's (24) degree holders, respectively. The smallest *relative* increases in demand are forecast to occur for on-the-job training (long- and moderate-term) and postsecondary vocational training. Even so, because the number of positions requiring short-term on-the-job training is so large (Figure 12.4), the absolute increase in this category will dominate employment growth in the other educational categories. The second largest absolute increase in demand (after short-term on-the-job training) is forecast to occur for workers with Bachelor's degrees. Their share of all employees is estimated to increase from 11.0 to 12.3 (or 3.8 million individuals).

Implications and Issues for Kentucky

The Kentucky Educational Reform Act of 1990 (KERA) provides a potential basis for developing a first-class, internationally competitive workforce in the state; the reform goals are in many ways consistent with high-performance (HP) workplace principles.[55] Spending per pupil and teacher salaries in Kentucky are converging on national averages under KERA (Figure 12.6),

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[52] Bailey, T. (1991, March). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher, 20,* 11-20.

[53] See also Kuttner, R. (1996, June 17). Is worker training really the answer? *Business Week,* 26.

[54] See Bailey (1991) for a discussion of the limitations of such forecasts.

[55] As DeYoung suggests, however, some groups (social meliorists) would argue that elements of KERA designed to prepare students to be socially and economically productive members of the workforce "primarily enhance the mindless economic development trajectories of a culture losing touch with human and community needs." See DeYoung. Whose KERA is it anyway? p. 4.

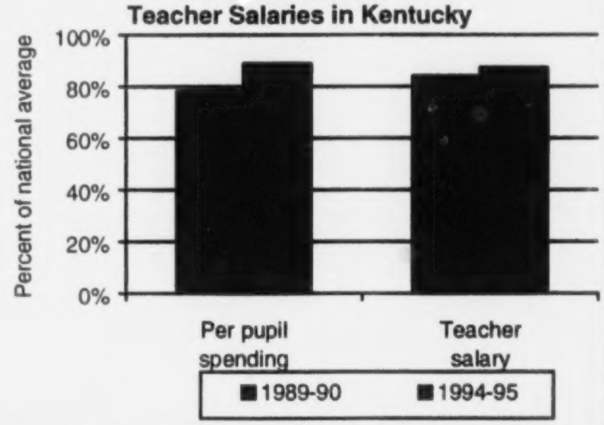
although they remain below those averages.[56] Given the fact that per capita income in the state in 1994 was only 81.7 percent of the national average, Kentucky is spending proportionally more per pupil and in terms of teacher salary than would be predicted on the basis of income alone. Yet, the only way in which the state can ever hope to raise income levels to or above the national average may be through even greater investments in education. Companies such as Lexmark, Square-D and Toyota Motor Manufacturing are proof that Kentucky firms and workers can switch to modern, post-Taylorist management techniques and be both nationally and internationally competitive.

A number of important activities are underway in the state to improve the transition of high school students into the workforce. Here it is possible only to provide a brief synopsis of some of these efforts. The state's School-to-Work program has the goal of helping "students become well prepared for the workplace by:

- Involving parents in helping children select a career goal
- Blending school based learning with work based learning
- Providing students with the opportunity to select a career major or an occupational cluster
- Bringing schools and businesses together to provide high quality, work based learning experiences
- Emphasizing the practical application of knowledge through integrated school/business educational programs of high quality, work based learning experiences"[57]

As a general principle, the School-to-Work program relies heavily on local partnerships among "employers, labor, schools, parents, community, and government."[58] It is based on contextual or work based learning, it integrates workplace competencies into the school curriculum and attempts to raise academic standards by providing a strong focus on careers. In Kentucky efforts are also devoted to developing "common languages" between educators and businesses, and creating a system of skills standards as well as skill certification. The state is launching initiatives in this regard using a Skills Standards Advisory Board.

FIGURE 12.6
Per Pupil Spending and Teacher Salaries in Kentucky



Source: Data from National Education Association, American Legislative Exchange Council and KY EDC

One-Stop Career Centers are another attempt to improve the functioning of labor markets in Kentucky and elsewhere in the nation, by integrating the large number of training/employment programs available into a single system. These centers act as job- and training-related information clearinghouses for both employers and workers, with the goal of reducing transaction costs involved in articulating labor supply and demand.

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[56] It is imprudent to conclude that higher spending on education automatically leads to a more competitive workforce. Indeed, cynics might point out that average SAT scores nationwide fell from just under 960 in 1967 to 900 in 1992 even as real per pupil expenditures more than doubled from $2,500 to $5,500. See Hanushek, E.A. (1993). Can equity be separated from efficiency in school finance debates? In P. Hoffman (Ed.), *Essays on the economics of education* (pp. 35-73). Kalamazoo, MI: Uphohn Institute for Employment Research. p. 39. Furthermore, the U.S. spends more per pupil than any of its industrial competitors at the primary and secondary levels (U.S. Bureau of the Census, Table 1370), and yet apparently fails to provide comparable levels of education.

[57] Kentucky Department of Education. (1996). *School-to-work.* [On-line] Available: www.kde.state.ky.us/tech_ed/stw.html.

[58] Kentucky Department of Education. *School-to-work.*

The Kentucky Tech(nology) System consists of schools that provide secondary and postsecondary training in the vocational-technical area. The system makes available customized training for new and existing businesses, and also provides worker assessment services, including "career inventories, interest inventories, psychomotor skills and academic potential as well as prehire assessment."[59] Presently, Tech Prep programs are offered at over 111 sites in the state. These four-year programs lead to diplomas or associate degrees in technical-vocational areas, and represent an alternative to college preparation courses, starting in high school with the 11th grade. The State of Kentucky provides training funds to businesses through the Bluegrass State Skills Corporation, under the auspices of the Cabinet for Economic Development.

At present relatively little is known about the cost-effectiveness of the various training programs operated within the state, and the total number of students or workers affected. For example, data on numbers of students benefiting from School-to-Work programs and various partnerships in different parts of the state (including rural areas) are not readily available. Similarly, information is generally not available on how long workers trained under the Tech Prep program remain in their jobs, what their earnings would be with and without the training, etc. Research is needed to shed light on the returns to these programs, and which aspects of the different training programs work well and could be used in other areas of the state, or in other programs. Furthermore, it would be valuable to compare the cost of a skills standard system with the cost of the worker assessment services provided by the Kentucky Tech System. Also, to determine where tax dollars should be spent so as to maximize returns to taxpayers, it would be important to know the relative costs and benefits of spending more on students now in high school, as opposed to training them later in their lives at public expense within different careers.

In this context, the following trends and issues are likely to be of particular importance to Kentucky over the next decade.

A. To the extent that Kentucky's demographic structure follows that of the U.S. South, the state will experience a small net decline in the population aged 20-45 years between 1993 and 2010, and a sizable increase in "mature workers" who will require additional training to participate effectively in the new economy.[60] This is driven in part by an increased focus on quality standards and skills certificates in the workplace. Training institutions and firms will need to upgrade the skills of existing, "mature" workers and this re-education will likely include expanded training of adults in colleges, universities and technical schools. Another group of workers whose training needs may warrant further attention is that of adolescents who have dropped out of high school and, in some cases, the workforce.

An important unresolved issue in this regard is also, who bears the cost of this training (i.e., the private and/or the public sector), and should the training be in terms of general or firm-specific skills (i.e., in terms of skills that are useful only to the firm) or skills that would be of use to the worker even if the firm later ceases to operate? It appears that public-private partnerships will become increasingly important in the future to ensure that effective training programs are available for workers, and to help facilitate the transition of adolescents into the workforce.

B. Primary, secondary and postsecondary schools increasingly need to lay a foundation for the three L's of education demanded in the new economy, *lifelong learning*, or "learning to earn," in addition to teaching core fundamentals of reading, writing and arithmetic.[61] In addition, greater attention may need to be paid to entrepreneurship training. According to a 1995 Gallup Poll,[62] nearly 70 percent of high school graduates nationwide were interested in starting their own businesses but lacked information about the process.

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[59] Kentucky Cabinet for Economic Development. (1995). *Kentucky: resources for economic development–McCreary County*. Frankfort, KY: Kentucky Cabinet for Economic Development Division of Research. p. 23.

[60] MDC, Inc. (1996). *The state of the South*. Chapel Hill, NC: Author.

[61] See also Tapscott, D. (1995). *The digital economy: Promise and peril in the age of networked intelligence*. New York, NY: McGraw-Hill.

[62] Ashmore, M.C. (1996, April). Starting at the top. *Vocational Education Journal*, 35 ff.

C. Unlike the nation as a whole, Kentucky remains a relatively rural state. More than one half of the state's population lives in rural areas, compared with less than one quarter in the nation as a whole. Recent research suggests that small manufacturers in rural areas have lower adoption rates of new technologies than their urban counterparts, in part because smaller firms have greater difficulty finding skilled workers;[63,64] thus, the Catch-22 problem of investment in advanced training by workers and adoption of modern technology by firms is likely even more pronounced in rural areas. Government decisionmakers in Kentucky should not ignore small rural firms as a dynamic source of economic growth, and should consider devoting additional resources to helping these enterprises modernize (for example, through information networks for entrepreneurs, by fostering ties between firms, universities, community colleges and technical schools, encouraging more apprenticeship and vocational training, etc.). A related challenge is to break the existing connection between low school achievement and high rates of poverty in some rural and urban districts.[65]

Summary and Conclusion

By way of summary, the following concerns are likely to be of particular importance to Kentucky over the next decade:

- A significant increase in the relative size of the workforce aged 45-64 and the attendant training needs of those workers
- The need to improve workforce preparation of adolescents, both in and out of the workforce, recognizing that not all will necessarily work in high-performance jobs
- Developing institutions and arrangements for sharing of training costs by firms to improve on-the-job training and productivity

The problems associated with moving an economy from mass manufacturing to one that relies on highly skilled workers who produce high quality and custom-tailored goods and services should not be underestimated. Furthermore, while social returns to investments in education to society have been universally shown to greatly exceed the costs, the benefits do not accrue immediately and a long-term perspective is essential. In Kentucky the payoffs in terms of higher personal incomes and state tax revenues to investing in the skills of the existing workforce, facilitating the transition of youth into the workforce, and creating a culture of lifelong learning, will likely more than compensate for the costs of these activities.

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[63] Wirth. *Education and work for the year 2000: choices we face.*

[64] Rosenfeld, S. (1992). *Smart firms in small towns.* Washington, D.C.: The Aspen Institute State Policy Program.

[65] Goetz and Debertin. Local economic conditions and KERA.

Section III

Our Changing Economy

Around the beginning of the 20th century, the U.S. economy was undergoing a significant transformation. As industrial technology such as the electric dynamo (which had been invented about 30 years earlier) reached maturity, huge electric generators were illuminating cities at night and running heavy equipment in factories while typewriters, addressing machines, Dictaphones, mimeograph machines and other equipment were appearing in offices for the first time. Yet productivity growth was sluggish, manufacturing wages were stagnant, capitalists—not workers—were taking an increasing share of total income, and the wage gap was widening between education "haves" and "have nots." What happened next is remarkable. Manufacturers introduced countless products that saved time, increased mobility, and raised the standard of living. Prices were low enough to make these products available to the vast majority of Americans, jobs were plentiful (with the notable exception of the Great Depression), and wage differences between workers at different education levels narrowed or stayed the same.

At the end of the 20th century we find ourselves in a situation remarkably similar to that of our compatriots 100 years ago. The computer has been around for at least 40 years and the microprocessor—the "computer within a computer"—for 25 years, and we are only beginning to realize their potential applications. Robots and computers have found practical applications in the factory; fax machines, pagers, and PCs (personal computers) have been in wide use for at least a decade. But productivity growth has been very slow since the 1970s, and far below the standard for most of the century. Labor's share of national income is falling, and the wage gap between education "haves" and "have nots" is widening.

Will the coming decades mirror the growth and prosperity of the 20th century? Futurist David Pearce Snyder thinks so. Citing a Stanford University report entitled *Computer and Dynamo: The Modern Productivity Paradox in a Not Too Distant Mirror*, Pearce notes that in the past, new technologies have not spurred immediate economic growth, but have, over the long run, helped bring tremendous increases in productivity, wages, and the standard of living. Snyder's conclusion: "By 2010 to 2015, the United States will become a mature information-intensive economy and surpass the levels of general prosperity and upward mobility experienced during the 1950s and 1960s . . . The new integrated information technology . . . is about to avalanche into all of our homes and workplaces, enriching and complicating daily life for everybody."[1]

Others are equally optimistic. *The Wall Street Journal*: "Changes in technology, trade and education would boost the fortunes of most Americans . . . Broader computer use would make workers more productive, more in demand and able to command higher salaries. And growing college enrollment would shrink the gap between the wealthy and middle classes."[2] *The Economist*: Information technology will cause "enormous investment and growth opportunities for the economy as a whole" and will create more jobs than it destroys.[3] *Business Week*: "Today's high-tech productivity bonanza will have a double-barreled impact on living standards . . . When the payoff comes, the wait will have been more than worth it."[4]

On the other hand, different outcomes are possible, too. Jeremy Rifkin argues in his widely read book, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-*

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[1] Snyder, D.P. (1996, March-April). The revolution in the workplace: What's happening to our jobs? *The Futurist, 30*, 8-13. p. 13.

[2] Davis, B. Harper, L. (1995, March 29). Middle class's fears about coming years might be misguided. *The Wall Street Journal*, pp. A1, A9.

[3] A world without jobs? (1995, February 11). *The Economist*, 21-23. p. 22.

[4] Farrell, C. (1995, October 9). Why the productivity tide will lift all boats. *Business Week*, 136-137. p. 137.

Market Era, that millions will be out of work and unemployment will "climb steadily and inexorably over the next four decades."[5] In *JobShift: How to Prosper in a Workplace Without Jobs*, noted management consultant William Bridges writes that plenty of work will remain, but the thing we in the industrialized world call a "job" will disappear.[6]

Amidst the debate, some areas of agreement appear. Common to all points of view is the belief that computers and other information and communications technology will cause a fundamental restructuring of not just the economy, but our way of life. Second, most believe that the next several years, at the very least, may be uncertain, uncomfortable, even tumultuous, as the economy adopts new technologies and new business practices. Third, there is at least a hint of optimism in most predictions, even among people who believe job loss is likely. Rifkin himself holds the hope that all people will eventually share in the benefits of the digital age, with less time spent at work and more on community development and other projects outside the market economy.

Many of these themes are reflected in the following chapters. Stephan Goetz and Peter Schirmer begin with a broad overview in two chapters which discuss changes in the state's industries and occupations, particularly with an eye on the effects of technological advancement. They also raise some of the issues related to our present economic transformation: stagnant manufacturing wages, corporate restructuring and downsizing, and a widening wage gap between high- and low-skill workers. Next are closer examinations of two important Kentucky industries—coal and tobacco. Gerald Weisenfluh, James Cobb, John Ferm, and Carol Ruthven see the potential for new market opportunities for coal, but new processing techniques and a better understanding of Kentucky's coal resources will be necessary before we can take advantage of these new opportunities. Will Snell predicts that while the structure of tobacco farming will change, tobacco will continue to be a viable economic sector as a result of growing international markets combined with a domestic market which is only declining gradually.

Has economic change wrought uncertainty? Michal Smith-Mello sees the social contract between employer and employee becoming far less favorable for workers, creating income inequities, critical gaps in health and retirement provisions, and, some argue, structural unemployment. Amitabh Chandra reports that income inequality has worsened, and this trend is more severe in Kentucky than in the rest of the nation. Possible explanations include demographic trends, the decline in unionization, and technological progress, which rewards highly skilled labor and places abundant low-skill labor at a comparative disadvantage in the global economy.

At the same time, though, tremendous new economic opportunities are emerging. Dick Dedic identifies five technology product areas, or areas for applied scientific research, which have the most potential for innovation and expansion within Kentucky: telecommunications, life science technology, biotechnology, material design, and environmental remediation. Chris Sauer notes that Kentucky has benefited from foreign investment in the state, particularly by Japanese firms. Moreover, global trade is growing, bringing with it new challenges, of course, but also offering new markets for a variety of Kentucky products. With regard to agricultural exports, Michael Reed believes that Kentucky is well positioned to take advantage of increased trade opportunities for raw and semiprocessed products. But the real growth is in value-added, processed products, and the food processing industry in Kentucky is not fully developed.

This section concludes with two chapters on the infrastructure that forms the foundation of the economy. Ted Grossardt sees the dispersion of manufacturing and service industries as a major issue affecting our transportation system. Nonmetropolitan transportation is becoming more important, and transportation, like virtually everything else, will be affected by advancing information technologies. Doug Robinson examines the possible effects of information technology in closer detail. Access to the information network, privacy, security and computer literacy bring new challenges to the public and private sectors. Indeed, information technology may bring fundamental changes to our social fabric. It certainly will affect the economy.

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[5] Rifkin, J. (1995, May-June). Work: A blueprint for social harmony in a world without jobs. *Utne Reader*, 53-63. p. 54.

[6] Bridges, W. (1994, September 19). The end of the job. *Fortune*, 62-74.

Industry Trends: Jobs and Earnings

Kentucky is experiencing a boom in services employment similar to that occurring nationwide. In the last 25 years, the services-producing sector accounted for 8 out of every 10 new jobs. Yet employment in Kentucky has not shifted to the services-producing sector nearly as quickly as it has in other states. Kentucky still has a relatively large percentage of its workforce in goods-producing industries. Employment in apparel, primary metals and motor vehicles has grown especially quickly relative to the rest of the nation. Kentucky's urban counties have had more employment growth overall, but rural counties have had much more growth in manufacturing employment. Counter to national trends, service sector earnings in Kentucky remain considerably below those in manufacturing, but the gap is narrowing, if slowly. The state's low rate of proprietorship formation and stagnant manufacturing wages are concerns. Identifying training and employment options for low-skilled workers displaced by technological advance in the services sector may become a key challenge facing policymakers in the next century.

By Stephan J. Goetz
University of Kentucky

Peter Schirmer
Kentucky Long-Term Policy Research Center

The U.S. economy experienced two fundamental transformations in the last 200 years. First, technological change in agriculture (as well as forestry and mining) and growth in mass production led to a massive out-migration of workers from extractive to goods-producing industries, in the process converting society from an agrarian to an industrial base. The industrial revolution would not have proceeded as rapidly as it did without the ready availability of workers coming off farms. That only a small share of today's workforce meets all of the food needs of this country is a hallmark of economic development, one admired by other countries throughout the world. Second, the advent of computer-driven, numerical control processes fundamentally transformed the goods-producing (manufacturing) sector, with a similar substitution of technology for human labor as had occurred earlier in farming. As manufacturing workers were released from factories, they found employment in a booming new sector: services.

Technological change, along with improvements in human and biological capital, as well as legal institutions, has traditionally been one of the main sources of economic growth. It led first to the release of labor out of agriculture into manufacturing and then from manufacturing into services. These shifts give rise to the question: Will technological change eventually lead to a similar release of workers out of the services sector and, if so, to which sector(s)? Or have employers in the service sector already exploited most of the gains possible from technological change?

At present, employment in the service-producing sector is expanding rapidly, although not all industries within the sector are affected equally. The banking industry, for example, is expected to reduce employment levels significantly over the next decade. But even as technology reduces the demand for labor in banking, it may increase the demand for labor in computer services. As the industrial structure of a dynamic market economy changes, occupational demands, skill requirements, wages, benefits, and the length and stability of employment also change.

Kentucky/U.S. Trends

Total full- and part-time employment in Kentucky, including wage and salary and proprietor jobs, grew by 735,000 jobs between 1969 and 1994, from 1.33 to 2.06 million jobs.[1] Thus, for every 100 jobs that existed in 1969, 55 *net* new jobs were created in the state between 1969 and 1994. In comparison, the U.S. economy generated 59 new jobs per 100 jobs in 1969. While the rate of increase in *wage and salary* jobs in Kentucky (61 percent) exceeded the national increase (55 percent), the increase in *proprietorships* in the state (34 percent) was significantly less than the national increase (87 percent). If the number of proprietorships in Kentucky had grown at the national rate, total job growth in the state would have been higher by about 138,000 jobs (19 percent) over this 25-year period. The high rate of proprietorship growth relative to wage and salary growth nationwide may largely reflect recent downsizing in corporations.[2]

Kentucky is experiencing a boom in services employment similar to that occurring nationwide: In the last 25 years, the services[3] sector alone accounted for *4 out of every 10* new full- and part-time private jobs created in the state. The more broadly defined service-producing sector, which includes the service sector as well as transportation, communications and public utilities (TCPU); retail-wholesale trade; and finance, insurance and retail estate (FIRE) services, accounted for more than *8 out of every 10* new jobs.

Yet the well documented shift underway, from extractive and goods-producing industries to the services sector, has been slightly less pronounced in Kentucky than in the nation (Table 13.1). Employment was more heavily concentrated in extractive industries in the state in 1994 than was the case nationally in 1969, and the decline in goods-producing employment over that period was considerably lower in Kentucky (4.0 percentage points) than nationally (9.3 percentage points).

TABLE 13.1
Composition of the U.S. and Kentucky Economies

	U.S.		Kentucky	
Sector	**1969**	**1994**	**1969**	**1994**
Extractive (primary)	5.1%	2.7%	13.1%	7.0%
Goods-producing (secondary)	27.5%	18.2%	24.8%	20.8%
All Services (tertiary)	67.4%	79.1%	62.2%	72.2%
Total	100%	100%	100%	100%
No. of jobs (in thousands)	90,878	144,391	1,328	2,063

Note: Extractive includes farming and mining; goods-producing includes construction and manufacturing; and services consists of all other sectors, including agricultural services, fisheries and forestry.

Source: Authors' calculations using Dept. of Commerce REIS data.

One way of interpreting the data in Table 13.1 is that Kentucky is less prepared than other states to develop a services-oriented economy, since a relatively larger share of its labor force is employed in the "old economy" (primary and secondary sectors). A different interpretation is that decisionmakers in Kentucky have deliberately sought to attract new and existing manufacturing employment from elsewhere in the nation into the state as a basis for generating long-term economic wealth. Many observers view some of these manufacturing sectors, such as motor vehicle parts production and assembly, as being on the cutting edge of modern industrial processes, including the intensive use of information technologies, total quality management (TQM) principles, and customer responsiveness.

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[1] The data are obtained from the Bureau of Economic Analysis, US Department of Commerce, Regional Economic Information System (REIS). This particular source was chosen, even though it contains data only through 1994, because it allows a breakdown of trends by urban and rural areas. These are the number of jobs estimated to exist in Kentucky; some of the jobs may be held by residents of bordering states, while some Kentuckians commute to jobs in neighboring states. The available data do not allow us to distinguish between the number of jobs held by Kentuckians as opposed to out-of-state residents.

[2] See, for example, Beyers, W. B. (1996, April). Trends in producer services growth in the rural heartland. In *Economic forces shaping the rural heartland*. Kansas City, KA: Federal Reserve Bank of Kansas City.

[3] This sector includes: hotels and other lodging places; personal services; private households; business services; auto repair, services and garages; miscellaneous repair services; motion pictures; health services; social services; museums, botanical, zoological gardens; membership organizations; engineering and management services; and miscellaneous services.

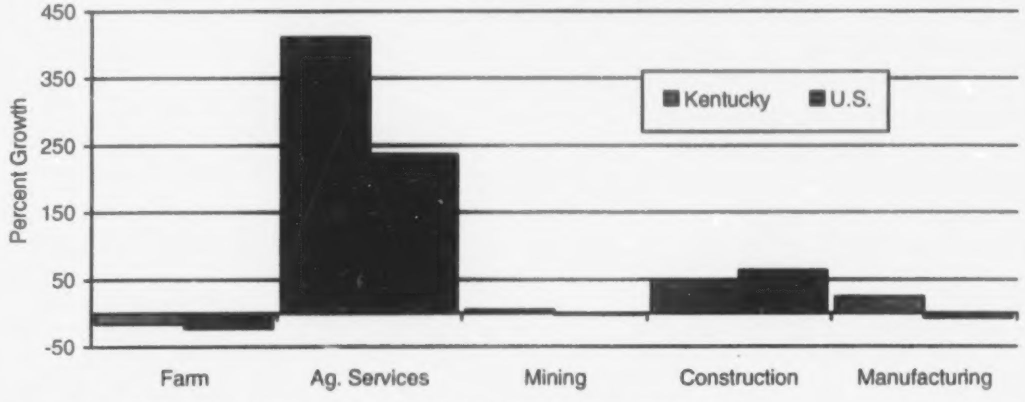
Also, according to Commerce Department (RIMS II) estimates, the motor vehicle assembly industry has high employment and earnings multipliers. This means that each new job and dollar earned in that industry in Kentucky is associated with the creation of a significant number of new jobs and additional earnings in the state. For example, when the Toyota manufacturing plant in Georgetown hires additional workers to increase the production of Camrys, other jobs are created in Kentucky in the satellite plants which supply Toyota with parts (such as car seats, plastic parts, electronic engine components, etc.). Furthermore, when the newly hired workers spend their income on food, shelter and clothing, even more jobs are created as a result in the state. In Kentucky, only forestry and fishery products and food manufacturing have higher employment multipliers than the auto assembly industry.[4]

Employment growth in motor vehicle parts production is only one example of the shifts in employment in Kentucky's industrial base. The Bureau of Labor Statistics (BLS) identifies three major sources of employment growth or decline in an industry:

- Changes in the demand for the industry's product
- Changes in technology
- Changing employment practices of business[5]

Examples of the latter include (domestic and international) outsourcing and hiring of temporary workers. In the subsequent analysis, we examine employment trends in the following major industry subdivisions:[6] farming; agricultural services, forestry, and fishing; mining; construction; manufacturing; transportation, communications and public utilities (TCPU); wholesale trade; retail trade; finance, insurance and real estate (FIRE); services; and government and government enterprises.

FIGURE 13.1
Growth in Extractive & Goods-Producing Jobs
Kentucky and the United States, 1969-1994



Source: Data from U.S. Department of Commerce REIS and Kentucky Dept. for Employment Services

The labor-displacing effect of technological change in agriculture between 1969 and 1994 on the number of farm proprietorships has been less pronounced in Kentucky than nationally (Figure 13.1). This likely reflects the large share of farm families in Kentucky growing tobacco.

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[4] U.S. Department of Commerce. (1992). *Regional multipliers: A user handbook for the regional input-output modeling system (RIMS II) (2nd ed.).* Washington DC: Author.

[5] U.S. Bureau of Labor Statistics. (1995, Fall). *Occupational Outlook Quarterly, 39,* 6.

[6] Office of Management and Budget. (1987). *Standard industrial classification manual, 1987.* Washington, DC: Executive Office of the President.

Agricultural services[7] were by far the most rapidly growing industry out of 10 industry divisions in the state. With a 411 percent net increase, jobs in this industry expanded at almost three times the rate of general service sector jobs (131 percent). In comparing these numbers, it is important to note that the 1969 employment level in agricultural services (4,000) was considerably less than in services (217,000). Even so, 185 net new jobs were created in agricultural services nationwide for every 100 farm proprietorships lost between 1969 and 1994. More generally, as a result of major demographic shifts toward dual-career and single-person households, as well as increases in income which raise the cost of time, the demand for convenience and processed foods has expanded rapidly. Not coincidentally, food- and fiber-related industries today employ nearly 1 out of 5 U.S. workers.

Limited or even negative growth in mining employment reflects both reduced reliance on coal as a source of energy and the effect of labor-saving technological change. Growth in construction employment in Kentucky was less than the national average. Statewide manufacturing employment increased 24 percent between 1969 and 1994, which is remarkable when contrasted with the 7 percent national decline. In 1969, manufacturing accounted for 19 percent of all jobs in Kentucky, compared with 15 percent in 1994. The corresponding percentages for the nation are 23 percent in 1969 and 13 percent in 1994.

Relative to the nation, employment growth in Kentucky has also been more rapid in TCPU and wholesaling and retailing, and less rapid in FIRE and services (Figure 13.2). The result for TCPU may in part reflect higher effective demand for utilities such as communications, electricity, and sanitary services as lower-income areas of the state caught up with service levels nationwide. Also, the communications sector is expanding and modernizing rapidly in Kentucky. The state's advantageous location relative to national population centers may in part explain the higher-than-average growth in transportation and wholesaling.

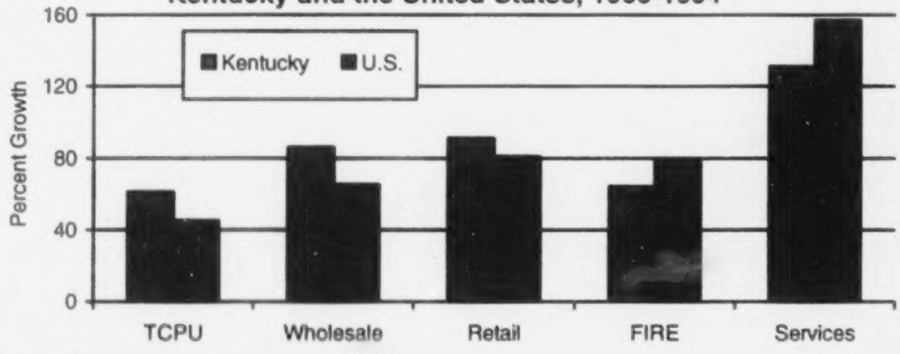

FIGURE 13.2
Growth in Services-Producing Jobs
Kentucky and the United States, 1969-1994

Source: Data from U.S. Department of Commerce REIS

In Kentucky and the nation, services had the largest numerical increase in employment. The service industry added 283,000 new jobs (in *net* terms) in Kentucky, more than doubling employment between 1969 and 1994. The retail sector had the second largest increase, adding 171,000 new jobs. Public sector employment rose by 31 percent in Kentucky and by 34 percent nationally. Services, retailing, and the public sector accounted for nearly three fourths of the 735,000 net new jobs created in the state between 1969 and 1994.

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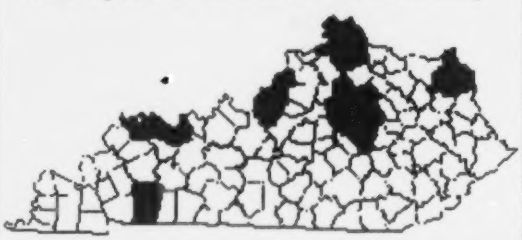
[7] This industry includes soil preparation, crop, veterinary, animal, farm labor, farm management, landscape and horticultural services, in addition to forestry, fishing, hunting and trapping-related services.

The service-producing sector has apparently not yet felt the full impact on employment of the information revolution embodied in new computer technologies.[8] A glimpse of the *potential* future effect of such a revolution on certain parts of the economy is provided by the retail banking industry, where employment has been forecast by some observers to decline markedly over the next 10 years "as banks go electronic."[9] Electronic cash and point-of-sales transactions, check imaging, computerized expert systems capable of scoring credit applications, and stock transactions over the Internet are reducing the demand for workers in banks and brokerage houses. Banks resisting the electronic information revolution are likely to go out of business as their competitors provide more services at a lower cost.

Urban vs. Rural Job Growth in Kentucky

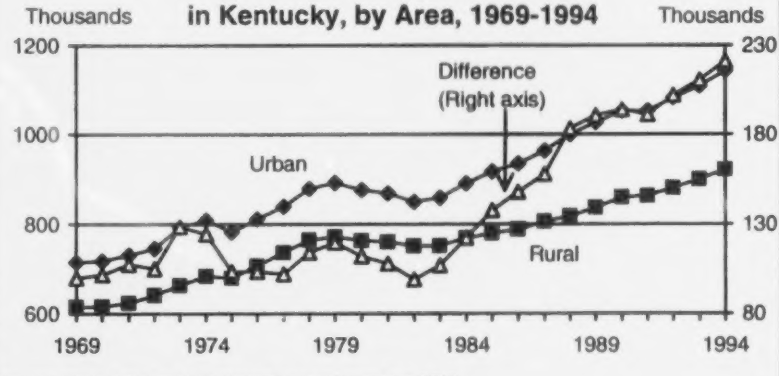
FIGURE 13.3
Metropolitan Counties in Kentucky



National polls and surveys reveal that Americans generally prefer to live in smaller communities and that they believe the quality of life is higher in rural communities.[10] A lack of employment opportunities in rural areas—especially for highly skilled workers seeking compensation commensurate with their training—has historically led many residents of rural areas, including Kentuckians, to migrate or commute to urban areas. For example, 200 years ago 95 percent of the U.S. population lived in rural areas. Today, that share has dropped to under 25 percent. Recently, rural areas have experienced a small renaissance resulting from rural manufacturing expansion and increases in jobs that are not bound to a particular locality (such as Internet services providers). Improvements in communications technology and transportation infrastructure, and lower land costs in rural areas, *may* lead to an acceleration of these trends in the future.

Total job growth over the last 25 years was more rapid in urban than in rural areas of Kentucky, resulting in a relative shift from rural to urban areas in the location of employment (Figure 13.4). For every 100 jobs that existed in 1969, urban areas added 60 net new jobs, compared with 50 jobs added in rural areas.

FIGURE 13.4
Full- and Part-time Job Growth in Kentucky, by Area, 1969-1994



Source: Basic data from U.S. Department of Commerce REIS

The effects of recessions in the early 1970s, 1980s, and again in 1991, on job growth in the state are visible in Figure 13.4. Both urban and rural areas shared in the prolonged national economic expansion starting in the mid-1980s, but since 1982 the rate of new job creation has been more rapid in urban than in rural counties. In 1969, rural counties had 51 percent of the state's population and 46 percent of all jobs; in 1994, they contained 52 percent of the population but only 45 percent of the jobs, as the number of commuters living in rural "bedroom" communities increased.

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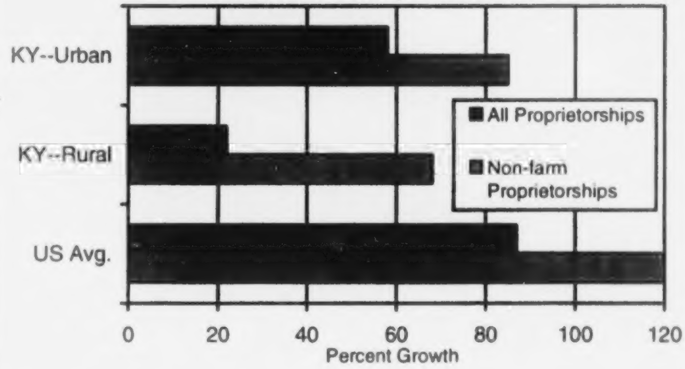
[8] See also Rifkin, J. (1995). *The end of work*. New York: G.P. Putnam's Sons.

[9] Deloitte and Touche, as cited by Holland, K. (1995, September 11). Wow, that's some bank. *Business Week*, 38.

[10] For example, see the results of a Roper poll of 1,210 adults reported in the *Lexington Herald-Leader* on June 11, 1992, A3. The urban-rural classification used here is based on U.S. Department of Agriculture definitions related to population size and adjacency to urban centers, and these terms are used interchangeably with "metro" and "nonmetro." An urbanized area contains a population of at least 50,000. Before 1990, Kentucky had 19 urban (metro) and 101 rural (nonmetro) counties according to this definition.

FIGURE 13.5
Rate of Proprietorship Growth in Different Areas, 1969-1994

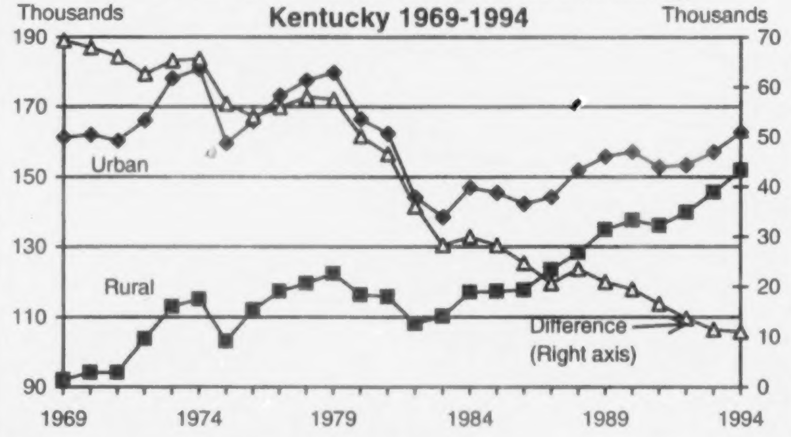


Source: Basic data from U.S. Department of Commerce REIS

In rural areas of Kentucky, fewer net new proprietorships were created than in urban areas (Figure 13.5). For reasons that are not fully understood, proprietorships in both urban and rural areas of the state grew at rates considerably below the national average.

While urban areas of the state have been creating more total jobs than rural areas, the pattern for manufacturing jobs is quite different (Figure 13.6). Since 1969, manufacturing jobs have expanded more rapidly in rural than in urban areas; furthermore, all of the *net* new manufacturing jobs were created in rural areas. While nearly 2 out of every 3 manufacturing jobs in Kentucky were located in urban areas in 1969, present trends are such that these jobs are almost evenly divided between urban and rural areas. Urban areas contained about the same number of manufacturing jobs in 1994 as in 1969 (about 160,000), while rural areas experienced a 65 percent increase over this period (from 92,000 to 152,000). The rapid increase in rural manufacturing employment since 1986, when plans for the Toyota Motor Manufacturing plant in Scott County were first announced, is noteworthy.

FIGURE 13.6
Urban vs. Rural Job Growth in Manufacturing, Kentucky 1969-1994



Source: Basic data from U.S. Department of Commerce REIS

Many observers maintain that shifts in manufacturing employment nationwide from urban to rural areas are the result of firms seeking low-skill and low-wage workers to carry out routine manufacturing work in branch plants. These kinds of jobs may be among the most likely to be relocated or lost to less developed countries,[11] where wages are lower than in the United States and yet average skill levels are generally rising. Thus, it *may* become increasingly difficult over time for rural areas in Kentucky to compete on the basis of low wages and skills in certain industries, as the recently announced closing of the Oshkosh B'Gosh clothing plant in Adair County illustrates. A key challenge is to provide workers with the skills and technology they need to compete with low-wage workers in other countries on the basis of higher productivity (or a lower labor cost index). It is noteworthy in this regard that exports of goods manufactured in Kentucky increased by more than 35 percent between 1990 and 1995 in constant dollars, suggesting firms in the state were sufficiently competitive to expand their sales.[12]

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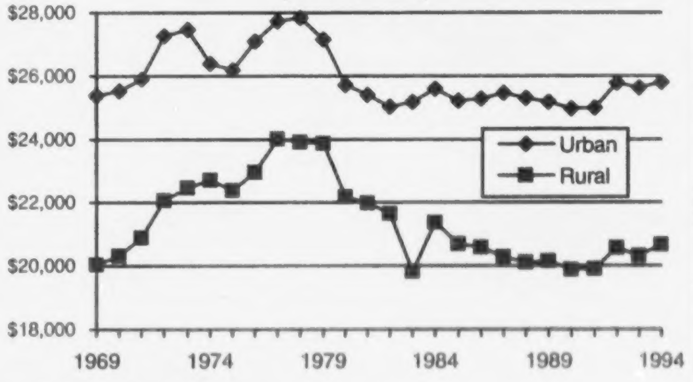
[11] Blair, J.P. (1995). *Local economic development: Analysis and practice*. Thousand Oaks, CA: Sage Publications.

At the same time, innovations such as just-in-time inventory management by manufacturers, which requires the nearby location of parts suppliers, and the need for firms to operate close to their markets to better monitor changes in consumer tastes and preferences, may attenuate the tendency of firms to locate overseas. Transportation costs and trade barriers in the form of quotas and domestic content legislation (for cars) may further reduce such tendencies.

Service sector jobs grew more rapidly between 1969 and 1994 in urban areas, where they increased 140 percent from a base of 131,000 jobs, than in rural areas where the increase was by 118 percent from 83,500 jobs in 1969. This may reflect higher earnings and purchasing power in urban areas, as well as agglomeration economies (which are inter- or intra-industry-specific cost savings that arise when two or more firms locate in the same place). The differential rate of growth of service sector jobs in urban and rural areas explains most of the diverging job growth pattern observed in Figure 13.4. Forty-seven percent of all net new jobs generated in urban areas between 1969 and 1994 were in services, compared with only 33 percent in rural areas.

Urban vs. Rural Earnings in Kentucky

FIGURE 13.7
Real Earnings per Job in Urban and Rural Kentucky, 1969-1994
(in 1994 dollars)



Source: Basic data from U.S. Department of Commerce REIS

Slow, and even negative, real wage and earnings growth are a concern to citizens and policymakers nationwide, because they forebode declining standards of living. Perhaps more ominously, a recent study shows that U.S. employment growth over the period 1979 to 1987 was greater in industries with lower average earnings in 1992 and the number of jobs in industries with higher average earnings declined.[13]

Real earnings per job by place of work are higher in urban areas of Kentucky, but the earnings gap has fallen slightly in real terms, from $5,300 in 1969 to $5,100 per job in 1994 (Figure 13.7).[14] Following national patterns, real earnings per job in both rural and urban areas of the state are lower in 1994 than in the late 1970s. Nationwide, average hourly earnings in constant (1982) dollars fell from $7.78 per hour in 1980 to $7.40 in 1994. Average weekly earnings fell from $275 to $256 over the same period.

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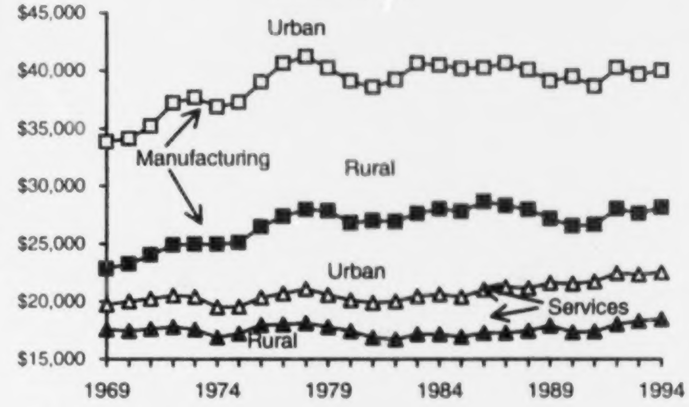
[12] Kentucky Department of Employment Services.

[13] Isserman, A.M. (1994). State economic development policy and practice in the United States: A survey article. *International Regional Science Review, 16*, 49-100.

[14] The argument is often made that lower incomes in rural areas are compensated for by lower costs of living, relative to urban areas. While this is accurate for some items, such as housing or land values, it is not necessarily true for basic food staples and gasoline, as revealed recently in a Kentucky Farm Bureau survey (see Basics cost more in E. Kentucky. (1992, May 3). *Lexington Herald-Leader*. p. A1). High costs of transportation into remote rural areas (particularly eastern Kentucky) and lack of competition among retailers can lead to higher costs for these items (or lower quality). These costs are compounded (in terms of cost and time) when rural residents commute over large distances to their places of work.

Real manufacturing earnings per job are 42 percent higher in urban than in rural counties (Figure 13.8), compared with a 48 percent discrepancy in 1969. This supports the contention that manufacturers in part locate in rural areas (and low-wage states) to take advantage of lower-cost labor. Furthermore, real manufacturing earnings per job in rural areas are lower now, although only modestly, than in 1986, when the rapid expansion in rural manufacturing jobs began in Kentucky. Real manufacturing earnings per job have tended to stagnate in urban areas since 1978.

FIGURE 13.8
Real Earnings per Job, by Area and Industry, Kentucky, 1969-1994
(in 1994 dollars)



Source: Basic data from U.S. Department of Commerce REIS

Real earnings in the services sector have been growing slightly since 1980 in urban areas and, with some fluctuations, in rural areas. Thus, earnings are increasing modestly in the sector accounting for most of the state's employment growth. In 1969, service sector earnings per job in rural areas in constant dollars were $2,200 below those in urban areas (a 12 percent difference). By 1994, the rural-urban earnings gap had increased to $4,100 (or 22 percent). Furthermore, service sector earnings in Kentucky remain considerably below those in manufacturing, which is counter to nationwide trends:

> *Misconceptions about the relative quality of jobs available to workers in various industries abound. One of the most difficult to dispel is the idea that jobs in the goods-producing sector are uniformly superior. Over the last 15 years, goods-producing wages have fallen as service-sector pay has increased, with the result that service workers now generally earn about the same as their counterparts in manufacturing. Consequently, policy that favors goods-producing employment is not necessarily a sensible strategy for generating high-wage opportunities for American workers.*[15]

Real government earnings per job have increased in parallel fashion between 1969 and 1994 in urban and rural areas, averaging just over $27,500 per job in urban areas, and $24,200 in rural areas in 1994. Consequently, although average earnings per job in services and the public sector are lower (by up to two thirds) than earnings in manufacturing, the gap between the three sectors is narrowing slowly as manufacturing earnings stagnate.

Trends in Location Quotients

A location quotient shows the extent to which an area such as a state or county is specialized in a given industry. Here we calculate the quotient as the ratio of statewide earnings in a given industry to the total workforce in Kentucky, divided by the ratio of total earnings nationwide in the same industry to the national workforce. The location quotient for apparel and related products manufacturing earnings per worker in 1994 roughly equals 2.0, indicating that the state has a relatively higher share of its employment in apparel manufacturing than do other states. This number also suggests that the state is a net exporter of apparel and related products.

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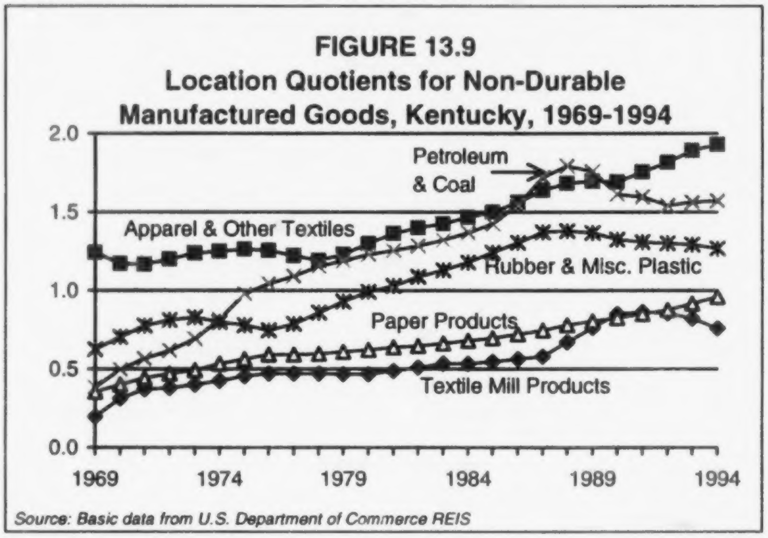
[15] Dupuy, M., Schweitzer, M.E. (1994, February 1). Are service-sector jobs inferior? *Economic Commentary*. Cleveland, OH: Federal Reserve Bank of Cleveland.

In contrast, Kentucky's location quotient for furniture and fixtures manufacturing is only about 0.5, suggesting the state has a low degree of manufacturing concentration in this industry, and that it is importing furniture and fixtures from other states or countries. A location quotient between 0.8 and 1.2 suggests that a state neither imports nor exports goods produced in that industry.

This kind of analysis provides clues about the relative strengths and weaknesses of Kentucky's economy and points to industries—such as furniture and fixtures—which are potential candidates for "import-substitution." In these industries an opportunity *may* exist for profitable expansion within the state. In the following section we discuss manufacturing sub-industries which experienced significant trends in their location quotients during the years 1969 to 1994.

FIGURE 13.9
Location Quotients for Non-Durable Manufactured Goods, Kentucky, 1969-1994

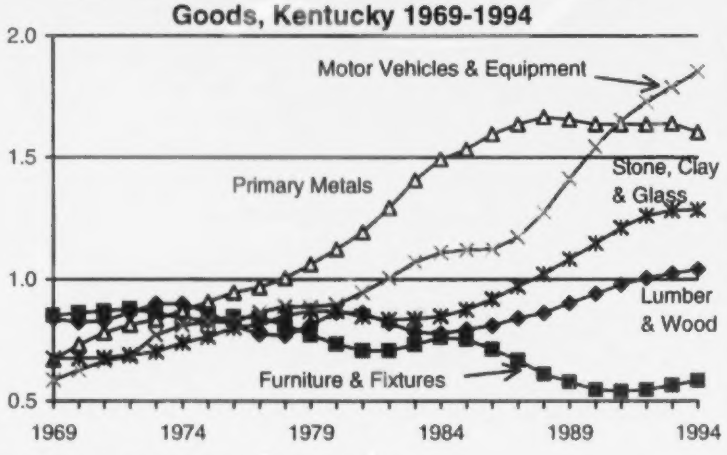


Source: Basic data from U.S. Department of Commerce REIS

Among nondurable manufactured goods, location quotients rose in five industries over the study period (Figure 13.9): petroleum and coal products, apparel and other textile products, rubber and miscellaneous plastics products, textile mill products, and paper and allied products. All but apparel had location quotients near or below 0.5 in 1969. Today, textile mill and paper and allied products have a location quotient just below 1.0, and the others have location quotients well above 1.0. This suggests that in all five industries import substitution has occurred, and/or exports from the state have increased. Companies such as Fruit of the Loom™ and Scott Paper™ account for a large share of the trends in apparel and paper products exhibited in the graph. In addition, the location quotient for tobacco manufacturers (not shown) declined from over 11.0 in 1969 to 7.2 in 1994.

In the durable manufactured goods category, primary metals; motor vehicles and equipment; stone, clay and glass products; and lumber and wood products had location quotients below 1.0 in 1969; today, all have quotients above 1.0. The motor vehicles and equipment sub-industry stands out, with a significant increase in the location quotient since 1986 (Figure 13.10). The remarkable success of the Ford Explorer sport utility vehicle, the Toyota Camry, and to some extent the Corvette explain the increase in the location quotient. At the same time, the quotient for primary metal industries has remained flat after rising rapidly to above 1.5 between 1969 and 1987. After remaining below 1.0 for all of the 1970s and 1980s, the location quotient for the lumber and woods products industry has now surpassed 1.0. The stone, glass and clay products industry basically changed its status from import-dependent to an exporting industry. In contrast, the trend for furniture and fixtures shows why some groups in the state have argued for increasing the value-added to wood products within the state rather than shipping raw lumber to states such as North Carolina to produce finished wood products: here the location quotient has fallen from 0.8 to under 0.6.

FIGURE 13.10
Location Quotients for Durable Manufactured Goods, Kentucky 1969-1994



Source: Basic data from U.S. Department of Commerce REIS

In general, more manufacturing industries experienced increases than decreases in their location quotients over the period studied. These changes are consistent with the patterns identified in Table 13.1 and confirm results of a recent study by the Corporation for Enterprise Development, stating "[t]hat Kentucky companies have been more aggressive in finding markets for their products or services outside the state."[16]

Industry Growth Projections

The Fall 1995 issue of *Occupational Outlook Quarterly* contains the following forecasts for industrial job growth nationwide between 1994 and 2005.[17] As with all forecasts, the accuracy of these predictions depends on the extent to which the assumptions used in making them prove to be correct. The BLS projects total employment to grow by 14 percent over the years 1994 to 2005, compared with 24 percent growth between 1983 and 1994. Wage and salary employment in the goods-producing sector is forecast to decline by 900,000 jobs nationally, while self-employment in that sector is forecast to grow by 200,000 jobs. In contrast, Thompson's analysis indicates that, in the next few years, ". . . at least some job growth is expected in nearly every manufacturing industry in Kentucky. . ."[18] Considerable continued growth is projected to occur nationally in the service sector, led by services including state and local government, education and hospitals (by 33 percent); and followed by retail trade (13 percent); finance, insurance and real estate (6 percent); transportation, communications and public utilities (7 percent); wholesale trade (7 percent); and state and local government, excluding education and hospitals (7 percent).[19]

For 1996, Challenger, Gray and Christmas, Inc., recently predicted a total of 420,000 layoffs from corporations, a number similar to that in 1995. Furthermore, they predict that "[p]ayroll-shedding will be most common in industries where the government's role, either as a purchaser or a regulator, is shrinking: defense, aerospace, telecommunications, banking, and utilities."[20]

Implications for Kentucky

1. An important trend nationally appears to be the move toward greater self-employment as corporations continue to "downsize." However, rates of proprietorship formation in Kentucky,

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[16] Sachdev, A. (1996, July 12). State earns first 'A.' *Lexington Herald-Leader*, p. C8.

[17] U.S. Bureau of Labor Statistics. *Occupational Outlook Quarterly*.

[18] Thompson, E.C. (1996). Quarterly forecasts for the Kentucky economy, 1996-98. *Kentucky annual economic report*. Lexington, KY: University of Kentucky, Center for Business and Economic Research. p. 5.

[19] U.S. Bureau of Labor Statistics. *Occupational Outlook Quarterly*.

[20] McNamee, M. (1996, January 8). Industry outlook. *Business Week*, 72-74A. See also: www.businessweek.com/1996/02/b602cs5.htm (page 3).

especially in rural areas, lag behind those of the nation by considerable margins. This raises the question of whether the educational sector (especially postsecondary institutions but also high schools) should develop entrepreneurial training programs to assist those seeking to start their own businesses. Lack of capital availability in the state to fund new ventures *may* constrain potential entrepreneurs.

2. Trends in the manufacturing and service sectors in the state differ from national trends in two important ways: manufacturing employment is growing rather than falling, and service sector earnings have not yet caught up with manufacturing earnings. The promotion of automobile manufacturing in the state appears to have been a sound strategy, and the robustness of this sector largely insulated the state's economy in the most recent national recession.[21] However, the stagnation of manufacturing earnings remains a concern to the extent that it forebodes stagnant standards of living, and it remains to be seen whether public and private training efforts in the state will ultimately lead to higher real manufacturing wages.

3. Like other states, Kentucky has yet to feel the full impact of technological change in services on employment levels. On the one hand, increases in labor productivity should raise earnings in services and accelerate the rate of convergence between service and manufacturing sector earnings. On the other hand, increases in productivity also will potentially reduce the number of workers needed by firms to produce current levels of output. Identifying training and employment options for low-skilled workers displaced by technological advance in the services sector may become a key challenge facing policymakers in the next century.

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Bureau of the Census, US Department of Commerce. (1995). *Statistical abstract of the United States: 1995*. Washington, DC: US Government Printing Office.

Kentucky Cabinet for Economic Development. (1996). *1996 Kentucky directory of manufacturers*. Frankfort, KY: Kentucky Cabinet for Economic Development Division of Research.

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[21] The data examined here do not allow us to evaluate the *long-term* benefits and costs of using tax and other incentives as a general industrial development strategy; however, a reduced tax base weakens a state's ability to supply public services, including education.

Occupational Trends: Education, Technology, Trade, and Corporate Restructuring

New corporate practices and strategies, technological advances and rising job skill requirements are making postsecondary training a virtual necessity for a high-paying job. This is driving a wedge between the earnings of education "haves" and "have nots." Corporate restructuring is eliminating hundreds of thousands of jobs, many of which belong to professionals and managers, but at the same time it is creating many different kinds of jobs. Kentucky may have a more serious problem with worker layoffs than other states because a larger share of our workforce is employed in occupations which are not growing quickly and because these workers do not have as much success finding new employment after a layoff. New employment might be found in technical jobs, particularly in health care, which will be among the fastest growing occupations in the coming years. Rural areas in Kentucky are already seeing rapid growth in these occupations.

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In the previous chapter, we looked at changes in the industrial structure of the United States and Kentucky. In this chapter, we look at occupations in the rapidly changing, globally competitive, technologically advanced, service-based economy. New corporate practices and strategies, technological advances and rising job skill requirements are making postsecondary training a virtual necessity for a high-paying job. This is driving a wedge between the earnings of education "haves" and "have nots." Corporate restructuring is eliminating hundreds of thousands of jobs, many of which belong to professionals and managers, but at the same time it is creating hundreds of thousands of different jobs. Kentucky may have a more serious problem with worker layoffs than other states because a larger share of our workforce is employed in occupations that are not growing quickly and because these workers do not have much success finding new employment after a layoff. Displaced workers may find new opportunities for retraining as technologists and technicians, particularly in the burgeoning health care-related field. This is true even in the most rural areas of the state, which have seen a dramatic increase in technical occupations in recent years.

Skills and Education

Historically, the manufacturing labor force of industrialized nations such as the United States consisted of a small share of highly skilled, decisionmaking managers and a large proportion of assembly line workers who needed only minimal training. Under *Taylorism*, the system of mass manufacturing pioneered by the engineer Frederick W. Taylor, assembly line activities were broken down into their smallest components so that workers faced simple, compartmentalized and highly repetitive tasks. Individual workers did not have to understand how their particular work fit into the creation of the end product, or the objectives of the firm. Formal educational and specific skills requirements under this system were minimal, and the ready availability of mass-produced, inexpensive goods assured high and rising standards of living for workers.

Current workforce training needs are largely the result of fundamental changes in the operation of the U.S. economy. In particular, a shift is underway ". . . from an economy based mainly on natural resources and economies of scale made possible by mass production for a large, relatively insulated American market to a more competitive global-information economy where economic success depends mainly on the quality of human resources."[1] As standards of living rise in the United States, consumers increasingly also demand custom-tailored, high-quality and innovative goods and services delivered on a timely basis. According to one technology analyst, "You have to plan for the birth of a new product and for its burial at the same time . . . if you're not planning for both of those events, you're going to lose a lot of money and market share."[2] These forces have led to so-called "diversified quality production"[3] in *high-performance* (HP) workplaces, a concept which is increasingly being adopted by the services sector.

With escalating international competition, American firms faced the choice of (1) upgrading to new production technologies and using highly skilled and productive workers (also known as the "high road"), or (2) keeping old technologies but combining them with less production and lower wage workers in developing countries (the "low road"). According to one estimate, fewer than 5 percent of all American firms had adopted HP forms of work organization in 1992;[4] other sources estimate that perhaps as many as one-third of all manufacturing firms employing over 50 workers now have adopted at least some HP principles.[5,6] Freshwater and colleagues argue that "at present, low-wage, low-skill employment may still provide an opportunity for developing a more highly skilled work force in the future, but the window for this strategy is closing."[7]

While a formal, generally accepted definition of HP practices does not yet exist, common features of HP companies (such as Lexmark, Southwest Airlines, Texas Instruments, Toyota, etc.) include "flexibility, innovation, quality, productivity, customer satisfaction, increased market shares and higher profits."[8] Osterman describes firms' expectations of modern workers as follows: "Today, employees are asked to understand and analyze certain kinds of data, to think about ways to improve the processes and products of the workplace, and to work with others to bring improvements about. No longer is it enough to perform rote tasks on an assembly line."[9]

In a similar vein, Zuboff writes that firms face the choice of automating or informating their workplaces.[10] The first choice leads to "deskilling," whereby workers do (and earn) less over time. In the "informated" workplace, in contrast, front-line workers are empowered to take on increasing responsibilities and decisionmaking. Terms used to describe modern workers include "skilled," "specialized," "flexible," and "possessing interpersonal skills." The latter are required for teamwork, which is becoming increasingly important in organizing labor. Feller notes that workers who are unable to execute certain key activities will be forced to "compete with automation, computerization and voice recognition equipment," with possibly detrimental consequences for their wages.[11]

Modern management methods are based on the realization that "empowered" workers, who carry greater responsibilities, are more content and productive. Also, since front-line workers know more about their particular work processes, they can help the firm gain strategic production advantages if allowed to participate in decisionmaking. In general, a key criterion for success in this new environment is the ability to match specific workers with specific technologies.[12]

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[1] Glover, R.W. and Marshall, R. (1993, Spring). Improving the school-to-work transition of American adolescents. *Teachers College Record, 94*, 588-610. p. 589.

[2] Quoted in McGraw, D. (1996, July 9). Staying loose in a tense tech market. *U.S. News & World Report*, 46.

[3] Tucker, M.S. (1996). Skills standards, qualification systems, and the American workforce. In L.B. Resnick and J.G. Witt (Eds.), *Linking school and work: roles for standards and assessment* (pp. 23-51). San Francisco: Jossey-Bass Publishers.

[4] Marshall, R., Tucker, M. (1992, October). Building a smarter work force. *Technology Review*, 52-60.

[5] Feller, R. (1996, April). The future of work. *Vocational Education Journal, 71*, 22, ff.

[6] Gephart, M.A. (1995, June). The road to high performance. *Training and Development, 49*, 29-44.

[7] Freshwater, D.F., Wojan, T. & Estes, K. (1996, March). *The future of low-wage, low-skill jobs in rural areas.* (Staff Paper No. 359). Lexington, KY: University of Kentucky, Dept. of Agricultural Economics. p. 13.

[8] Gephart. The road to high performance. p. 31.

[9] Osterman, P. (1994, Autumn). The great American job hunt: Getting started. *Wilson Quarterly*, 46-55. p. 52.

[10] Zuboff, S. (1988). *In the age of the smart machine: The future of work and power*. New York: Basic Books.

[11] These activities include "using a computer to locate, process or communicate information; safeguarding information and valuables; scheduling work activities for oneself; providing information to people; determining the priority of work activities; working with people in other departments to accomplish goals; judging the importance, quality and accuracy of information; coordinating individual work activities with work of others; listening to instructions from or concerns of supervisors or co-workers and responding." Feller. The future of work. p. 26.

Workplace changes brought about by informating reduce the need for middle management layers, allowing firms to cut overhead costs as exemplified recently by widespread and highly publicized layoffs of white collar workers in some of America's largest corporations. Informating is occurring in many sectors, including financial services, where bank tellers are becoming more broadly trained, not only to cash checks and receive deposits, but also to provide investment advice. Small, self-contained cells of work teams allow computer manufacturer Compaq to respond quickly to changing customer demands, while at the same time raising worker output by 23 percent and improving quality by 25 percent.[13] In automobile manufacturing, independent worker teams make decisions to resolve problems and schedule parts deliveries. In agriculture, farmers use sophisticated information technology to vary fertilizer application rates as they pass through their fields, compensating for variations in inherent soil fertility within fields.

Other innovations, such as the ISO 9000 quality standard, reinforce changes in the workplace. Developed by the International Standards Organization, the ISO 9000 standard involves the implementation of systems designed to assure high quality in production. The standard also requires companies wishing to supply parts to other companies to identify worker training needs in areas where quality improvement is possible.[14] Earning the ISO 9000 standard may become a prerequisite for U.S. firms that wish to export goods and services. The European Community has already adopted this standard.

These workplace innovations are raising the demand for skilled and well-educated workers. While many of the highest paying jobs have always been filled by well-educated workers, many high-paying jobs for people with less education were also available in the past. But in the coming years, nearly all job openings (due to net job creation and replacement of current workers) in occupations paying high wages will require at least some training after high school, and more than half of all job openings in occupations paying high wages will require at least a college degree.

TABLE 14.1
Projected Total Job Openings*
by Education Level, 1994-2005
(Numbers in thousands)

Necessary Training	Total	Median Wage of Job Openings		
		Very High or High	Average	Very Low or Low
No special training	15,674	1%	8%	91%
Vocational, formal employer training or other postsecondary	14.247	36%	16%	48%
Bachelor's degree or more	7,603	80%	19%	1%

* Total job openings represent the sum of employment increases and net replacements.
Source: Authors' computations of Bureau of Labor Statistics employment projections and training needs for each occupation

As Table 14.1 shows, of the 15 million job openings which will be available over the next 10 years to workers with only a high school education or less, 91 percent will pay low or very low wages. Workers who participate in vocational training, formal training programs at work, or other postsecondary education will find that almost half of their employment opportunities are for jobs which pay low or very low wages. However, this category of workers includes people with very different training backgrounds. As these workers with some postsecondary training accumulate experience, they may move into higher-paying occupations, even without obtaining a bachelor's degree. Finally, four out of five job openings requiring at least a bachelor's degree pay high or very high wages.

However, Table 14.1 *does not* indicate that four out of five college graduates will have a high-paying job. In 1990, the Bureau of Labor Statistics (BLS) projected that total demand (including job growth, job upgrading, and replacements) for college graduates will grow by 914,000 jobs a year through 2005. BLS also projected supply to grow by 1,320,000 graduates a year. The result is that as many as 30 percent of college graduates in the job market could be in jobs not traditionally requiring a four-year degree, or else they could be unemployed. During the previous decade, about 20 percent of college graduates found themselves "underutilized" or unemployed.[15]

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[12] Wirth, A.G. (1992). *Education and work for the year 2000: Choices we face*. San Francisco: Jossey-Bass Publishers.

[13] McGraw, D. (1996, July 9). Staying loose in a tense tech market. *U.S. News & World Report*, 46.

[14] Elliot, C.K. Jr., Shapiro, A. H. (1993, June). Changing U.S. labor force presents new challenges for corporations. *Site Selection*, 618-28.

Too few graduates in some fields and too many in others may partly explain why so many college graduates find themselves in jobs not requiring a four-year degree, but Daniel E. Hecker, an economist with BLS, finds that few fields are actually facing shortages.[16] Yet Hecker also reports that the wage premium paid to workers with a four-year degree is higher no matter what the occupation. The median weekly earnings for handlers, equipment cleaners, helpers, and laborers, for example, were $58 higher in 1990 for workers with four years of college than for workers with only four years of high school. If you are a mechanic with four or more years of college, your earnings grew 42 percent between 1983 and 1990; with just four years of high school, your earnings only grew 21 percent.[17]

TABLE 14.2
Median Weekly Earnings of Full-time Wage and Salary Workers by Occupation and Years of School, 1990

	4 years of high school	1 to 3 years of college	4 years of college
Total	$354	$431	$569
Executive, administrative and managerial	$459	$538	$675
Professional specialty	$441	$549	$595
Technicians	$412	$481	$562
Sales	$302	$579	$580
Administrative support, including clerical	$326	$361	$401
Service, except private household	$260	$326	$401
Precision production, craft, and repair	$465	$543	$601
Transportation and material moving	$411	$455	$500
Handlers, cleaners, helpers and laborers	$302	$329	$360

Source: Current Population Survey, cited by Hecker

College is not the only route to getting a job with high wages. Over the next decade, about one third of the expected 14 million job openings for occupations requiring less than a college degree but more than high school will pay high or very high wages. The Bureau of Labor Statistics reports that in 1993, nearly 40 percent of workers with less than a bachelor's degree earned more than $500 per week, and nearly 20 percent earned $700 per week or more.[18] Yet despite the lack of bachelor's degrees, many of these workers have considerable training and experience; some training and certification programs take up to two years to complete. Not everyone must—or even should—attend college, but some sort of postsecondary training will almost certainly be necessary if a person is to have a realistic chance at getting a "good job."

Wage Inequality

The trend toward wage inequality is well documented. Between 1969 and 1993, wages for men in the bottom 40 percent of the earnings distribution fell, and for men in the top 40 percent of the earnings distribution wages rose.[19] The trend was more pronounced in the 1980s and 1990s. Women at all levels of the earnings distribution saw their wages rise between 1969 and

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[15] Shelley, K. J. (1992, Summer). More college graduates may be chasing fewer jobs. *Occupational Outlook Quarterly, 36,* 5-11.

[16] Hecker, D. (1992, Summer). College graduates: Do we have too many or too few? *Occupational Outlook Quarterly, 36,* 13-23.

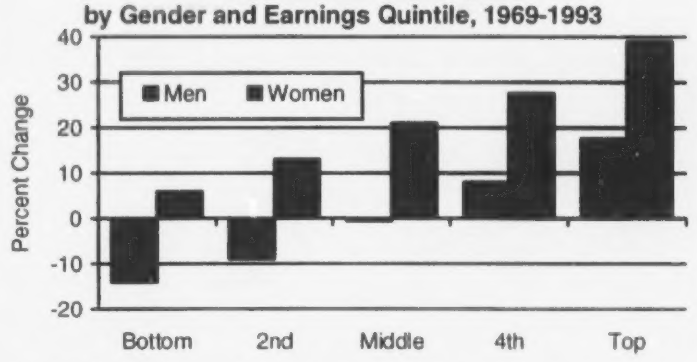
[17] Hecker. College graduates: Do we have too many or too few?

[18] Cosca, T. (1994, Winter). High earning workers who don't have a bachelor's degree. *Occupational Outlook Quarterly, 38,* 38-46.

[19] Burtless, G. (1996, Spring). Worsening American income inequality: Is world trade to blame? *The Brookings Review, 14,* 26-31.

1993, although all of the wage growth for women at the bottom occurred between 1969 and 1979. After 1979, their annual earnings fell.[20]

FIGURE 14.1
Changes in Real Earnings, by Gender and Earnings Quintile, 1969-1993



Source: Data from Bureau of the Census, calculated by Burtless

The wage disparity has contributed to a growing disparity in personal income. During the 1970s, personal income grew for people at all income levels (but faster for those at the high end). However, real income fell for people in the bottom 60 percent of the income distribution between 1979 and 1993. Gary Burtless of the Brookings Institution writes, "In 1969, income at the 95th percentile of adjusted personal income was a little less than 12 times income at the 5th percentile. By 1993, income at the 95 percentile was more than 25 times income at the 5th percentile."[21]

The news is not entirely bad, however because people are not locked into an income percentile for their entire lives. A 1992 study by the U.S. Department of Treasury, based on 14,351 income tax returns filed from 1979 through 1988, suggests that there is considerable mobility between income levels. Of the people in the lowest income quintile in 1979, 21 percent rose to the second quintile, 25 percent to the middle, 25 percent to the second-highest, and 15 percent moved up to the top quintile. In other words, 86 percent of those in the bottom income quintile in 1979 had managed to raise their incomes by enough to move to a higher quintile by 1988.[22] Still, the gap between the highest and lowest quintiles is much larger today, meaning that people in the lower quintiles have more ground to make up than in 1979.

Technology Growth, Trade, and Immigration

Although numerous explanations have been offered as to why wage inequality has increased, at the center of the debate are two competing theories: one based on technology, the other on international trade and immigration. The former argues that as automation and computerization have grown in most industries, the demand for skilled workers has risen. Because skilled workers are relatively scarce, employers have been forced to bid for these workers by raising their relative earnings. According to the latter, companies employing low-skill labor in the United States have had to either depress wages or eliminate jobs in order to remain competitive, and immigration has enlarged the pool of available low-skill labor, which would also reduce the relative wages of low-skill workers.

Although trade and technology effects are not mutually exclusive, the preponderance of opinion seems to be that technology is a bigger factor than international trade and immigration in skewing wages. Gary Burtless of the Brookings Institution notes that between 1969 and 1993, U.S. industries most affected by trade have eliminated low-skill, low-wage workers *no faster than* the industries least affected by trade. This, he writes, is "a pattern that is extremely hard to square with the claim that foreign trade is the main factor behind soaring wage inequality."[23] In addition, imports from developing countries represent a small share of gross domestic product, and this share fell in the 1980s, even while the wage gap rose.[24] Two economists at the Federal Reserve Bank of New York concluded that technological progress was the most important influence on wage inequality, while international trade made a more modest contribution to the problem.[25] Finally, Stephen Golub, an economist at Swarthmore College, calculates that unit labor costs (the labor cost of producing a single item) in many low-wage countries are quite close to, or in some cases higher than, unit labor costs in the United States because of much lower worker productivity.[26]

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[20] Burtless. Worsening American income inequality: Is world trade to blame?

[21] Burtless. Worsening American income inequality: Is world trade to blame? p. 28.

[22] Cox, W.M., Alm, R. (1995, December). The good old days are now. *Reason, 27.* [On-line]. Available: www.reasonmag.com/9512/COXfeat.html.

[23] Burtless. Worsening American income inequality: Is world trade to blame? p. 30.

MIT economist Olivier Blanchard describes the high-skill labor market as a race between an increase in relative supply and relative demand. As more people attend college or receive other postsecondary training, the supply of high-skill workers relative to low-skill workers rises and the wage premium paid to high-skill workers decreases because employers don't have to do as much "bidding" for labor. On the other hand, as technology spreads throughout the economy, the demand for high-skill workers relative to low-skill workers rises and employers must compete with each other in order to retain high-skill labor. Blanchard writes, "In the 1970s, relative supply won; in the 1980s, relative demand won. But in both decades, the race has been fast on both sides."[27] Technology growth affects the relative demand for high-skill workers. International trade and immigration affect the relative supply. (As a truly global labor market emerges, the pool of low-skill labor increases, thus reducing the *relative* supply of high-skill labor.) In either case, the trends could lead to a larger wage gap between high- and low-skill workers. Blanchard also warns that employment rates for low-skill workers could decrease significantly in the future if current trends continue.

Corporate Restructuring

Corporate restructuring sounds innovative and bold, yet Americans have come to expect an accompanying elimination of jobs. In 1995, U.S. corporations eliminated 440,000 jobs, bringing the number of jobs cut in the 1990s by U.S. corporations to 2.9 million.[28] The American Management Association reports that the percentage of companies which downsize because of a downturn in business has fallen steadily in the 1990s. More than 40 percent of firms which downsized in 1990 and 1991 cited a business downturn as the sole cause of the downsizing, and another 30 percent said a business downturn was a contributing cause. Today, about 30 of downsizing firms say that a business downturn is a contributing cause, but only 4 percent of firms say it is the sole cause. In contrast, the percentage of firms citing "automation or other new technology" as a reason for downsizing has more than doubled during the 1990s. Also, more than half of downsizing firms cited "reengineering of business processes" and almost two thirds cited "organizational restructuring" as reasons for downsizing.[29]

In other words, hundreds of thousands of workers are losing their jobs today, just as they did during the beginning of the decade. However, they are doing so for different reasons. Many of today's workers are being replaced by other workers who do different jobs, or they are replaced by a computer or other technology. The moral to the story: Going back to work is more than simply a matter of finding the same job with a different employer; today's displaced workers need retraining and may be re-employed in entirely different occupations.

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[24] Solow, R. (1994). Widening wage inequality. *The Urban Institute Policy and Research Report, 25*. [On-line]. Available: www.urban.org/periodcl/prr25_1b.htm.

[25] Brauer, D.A., and Hickok, S. (1995, January). Explaining the growing inequality in wages across skill levels. *Federal Reserve Bank of New York Economic Policy Review*, 1, 61-75.

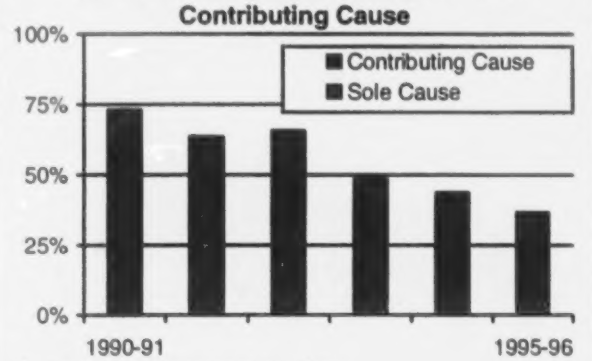
[26] Koretz, G. (1995a, September 11). The equalizer: productivity. *Business Week*, 26.

[27] Blanchard, O. (1995, January). Macroeconomic implications of shifts in the relative demand for skills. *Federal Reserve Bank of New York Economic Policy Review*, 1, 48-53. p. 48.

[28] Arnst, C. (1996, January 22). Out one door and in another. *Business Week*, 41.

[29] American Management Association. (1996). 1996 *AMA Survey: Corporate downsizing, job elimination and job creation*. [On-line]. Available: www.amanet.org/ama/survey/96survey.htm.

FIGURE 14.2
Percentage of Downsizings with Business Downturns Cited as Sole or Contributing Cause



Source: American Management Association

In the past, downsizing usually meant layoffs primarily for blue-collar workers and lower-level white-collar workers, but no longer. When the Chemical Bank and Chase Manhattan Corporation merger eliminated 12,000 jobs and AT&T eliminated 40,000—both in late 1995 or early 1996—many professional and managerial positions were eliminated. According to the U.S. Department of Labor, managerial and professional workers accounted for 24 percent of all permanent layoffs from 1991 to 1993, compared with 13 percent in 1981-1983. Even managers at the top of the pay scale are vulnerable.[30] Of course, blue-collar workers have lost many jobs as well. Rising productivity has enabled output to steadily grow while companies shed workers. Since 1989, manufacturing employment has fallen by half a million jobs.[31] Meanwhile, real manufacturing output is up by about 10 percent.[32]

After downsizing, the fates of white-collar workers and other workers are markedly different. BLS reports that more than 75 percent of white-collar employees who lost their jobs from 1993 to 1995 had found work by February 1996. In contrast, only about 64 percent of low-skill blue-collar workers had found new jobs.[33] Also, past studies have found that when laid-off blue-collar workers find new jobs, the pay averages 20 percent less than the old job.[34] Although more white-collar workers are losing jobs today than in the past, many find good jobs with other companies. Eric R. Greenberg, director of management studies for the American Management Association, observes that "high-priced managers are being replaced with other high-priced managers with different skills."[35] (Arnst). By developing new skills, particularly in the areas of marketing, sales and technical occupations, many well-educated workers are finding excellent new job opportunities.[36]

Corporate restructuring frequently involves outsourcing of some functions and elimination of many titles and positions. Outsourcing means hiring outside firms to do things formerly done inside the company. Functions such as customer relations, data processing, debt collection, advertising, and mailings are commonly outsourced these days, to the extent that employment in business services industries (companies which provide services to other companies) doubled between 1984 and 1994,[37] and employment in the temporary-help industry has risen almost 50 percent since 1990, to 2.25 million in 1994.[38] Often, employees whose jobs have been outsourced are offered jobs doing the same thing for the same company, but in the employ of another firm. And often, these workers are paid less—sometimes much less—and with inferior benefits. As just one example of many, Robert Half International Inc., which supplies temporary workers to businesses, doubled the number of accountants it placed between 1992 and 1995. These temporary white-collar workers are paid 10 percent to 20 percent less than full-time accountants, receive few benefits, and seldom work year-round.[39]

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[30] Koretz, G. (1995b, September 11). No letup in U.S. layoffs. *Business Week*, 26.
[31] Arnst, C. Out one door and in another, 41.
[32] Mittelhauser, M. (1994, Fall). Manufacturing: It's still the industrial age. *Occupational Outlook Quarterly, 38*, 26-35.
[33] postsecondary Bureau of Labor Statistics. (1996). *Worker displacement during the mid 1990s*. Washington, DC: Author. [On-line] Available: stats.bls.gov/news.release/disp.toc.htm.
[34] Arnst. Out one door and in another.
[35] As cited by Arnst. Out one door and in another.
[36] Arnst. Out one door and in another.
[37] Bernstein, A., Zellner, W. (1995, July 17). Outsourced—and out of luck. *Business Week*, 60-61.
[38] Bernstein, A. (1995, July 17). The wage squeeze. *Business Week*, 54-63.

TABLE 14.3
Displaced Workers by Occupation of Lost Job and Employment Status in February 1996

	Total (thousands)*	Employed	Unemployed	Not in the labor force
Total, 20 years old or over**	4,171	73.6%	12.5%	13.9%
Executive, administrative and managerial occupations	701	76.6%	9.2%	14.2%
Professional specialty occupations	466	79.5%	10.9%	9.6%
Technologists and technicians	136	85.7%	7.0%	7.3%
Sales occupations	478	68.2%	16.3%	15.4%
Administrative support occupations, including clerical	722	72.8%	10.5%	16.7%
Service occupations	247	77.0%	11.1%	11.9%
Farming, Forestry and fishing occupations	40	NA.	NA.	NA.
Precision production, craft, and repair occupations	578	80.4%	10.0%	9.6%
Operators, fabricators, and laborers	775	63.8%	18.1%	18.1%

* Data refer to persons who had 3 or more years of tenure on a job they had lost or left between January 1993 and December 1995 because of plant or company closings or moves, insufficient work, or the abolishment of their positions or shifts.
** Total includes a small number who did not report occupation.
Source: Bureau of Labor Statistics,

Some workers who lose their jobs end up self-employed. While it is true that self-employment is often less secure than a salary or wage position, individuals have many more resources than they did a generation ago. With the explosion of new information and communication technology, self-employed people have at their fingertips "the creative power of a factory tycoon of the Industrial Era, and the communications power of a broadcast tycoon of the Television Era," in the words of author George Gilder.[40] Particularly with the emphasis on downsizing these days, more people may try to go into business as independent contractors and consultants.

National and State Comparison

The trends which are altering the nature of work—rising job skill requirements, wage inequality, technological displacement of workers, global trade and immigration, and corporate restructuring—are just as significant in Kentucky as in the rest of the country. Nonetheless, Kentucky, like all states, has its unique characteristics. The age distribution of the populace, education levels, geography, climate, tax laws, and wage rates all affect the types of industries which locate in a particular area, the services demanded by residents, the kinds of jobs workers are capable of doing, and the amount of technological investment in an area. As a result, the industries and jobs in one state will be different from the industries and jobs in another or in the nation as a whole. For example, while less than 22 percent of the nation's workforce is employed in the goods-producing sector of the economy, this sector employs 30 percent of the workforce in Kentucky.

With technology enabling increased automation in the workplace and with the growing demand for outsourced business services, it is not surprising that blue-collar occupations are growing much slower than service and white-collar occupations. By 1994, managerial and professional specialty occupations had nearly equaled blue-collar occupations as a share of national employment; each accounted for roughly one in four jobs in the United States. In Kentucky, blue-collar occupations represent about 32 percent of the workforce, while managerial and professional specialty occupations account for only 20 percent. Thus workers with less education may have proportionately more opportunities for higher wage jobs in Kentucky than elsewhere. Conversely, highly educated workers have proportionately fewer high-wage job opportunities in Kentucky.

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[39] Bernstein. The wage squeeze.
[40] As cited in Leyden, P. (1996). George Gilder, economist and author. *On the edge of being digital.* [On-line] Available: www.startribune.com/digage/gilder.htm.

Employment shares in Kentucky and the nation appear to be changing at approximately the same rate. Occupational employment projections for 2005 (see Table 14.5) suggest that managerial and professional specialty occupations will continue to increase their share of employment nationally, while the share of jobs in traditional blue-collar occupations declines. Kentucky should mirror the national trends. However, blue-collar occupations will still comprise a significantly larger share of total employment in Kentucky than managerial and professional specialty occupations (29.6 percent versus 20.8 percent). Unless Kentucky's industrial composition (discussed in the previous chapter) changes dramatically, it is likely that Kentucky will have an above-average share of its jobs in blue-collar occupations for many years to come. Nonetheless, Kentucky mirrors the United States in terms of occupational *growth*: managerial and professional specialty occupations are growing considerably faster than blue-collar occupations.

BLS predicts rapid growth in service occupations in the next decade. Service occupations include food preparation, child care, law enforcement and fire fighting, housekeepers and health service occupations such as nursing aides and occupational therapy aides. Service occupations do not, however, include most people who work in "business services" industries, such as accounting, data processing, and law. Most people in those industries are classified as either technicians or professional specialists. Thus, most of the jobs in the high-growth category of service occupations are lower paying ones. Service occupations in health care are expected to be among the fastest growing.[41] BLS predicts that the increase in health service occupations between 1994 and 2005 will be three times the increase between 1983 and 1994.

Growth of the health care industry should also boost employment for technicians and related technical support occupations. Health technicians will account for 70 percent of the growth in the total number of technicians between 1994 and 2005.[42] The growing health care industry may affect Kentucky's workforce more than the nation's. Between 1987 and 1994, health technicians and technologists (a sub-category of technicians and technologists) increased employment by 54 percent in Kentucky, and the Department for Employment Services projects a 30 percent increase between 1994 and 2005.[43] Growth has been especially high in some rural parts of the state. Yet with less than 5 percent of total employment, technicians and related support occupations will remain rather small compared to other occupational groups.

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[41] Silvestri, G.T. (1995, November). Occupational employment to 2005. *Monthly Labor Review*, 118, 60-87.

[42] Silvestri. Occupational employment to 2005.

[43] Kentucky Department for Employment Services. (1996). *Kentucky occupational employment outlook and job openings, 1994 to 2005*. Frankfort, KY: Author.

TABLE 14.4
National and State Employment
by Major Occupational Group, 1994 and 2005

	United States		Kentucky	
	1994	2005	1994	2005
Total, All Occupations	127,014,000	144,708,000	1,744,770	2,046,431
	Percent of Workforce		Percent of Workforce	
	1994	2005	1994	2005
Executive, administrative and managerial occupations	10.2	10.4	8.0	8.0
Professional specialty occupations	13.6	15.5	11.9	12.8
Technologists and technicians	3.5	3.7	3.2	3.4
Sales occupations	11.0	11.4	11.9	12.4
Administrative support occupations, including clerical	18.2	16.7	15.0	14.0
Service occupations	15.9	17.2	15.8	16.9
Farming, Forestry and fishing occupations	3.0	2.5	3.4	2.8
Precision production, craft, and repair occupations	11.1	10.3	11.5	11.0
Operators, fabricators, and laborers	13.5	12.4	19.4	18.6

Source: U.S. Bureau of the Census and Kentucky Dept. for Employment Services

Rural-Urban Comparison

Just as industries and occupations differ from state to state, so, too, do they differ from county to county. Rural areas in Kentucky have, as one might expect, more people employed in farming, forestry and fishing occupations, while urban areas have more engineers, lawyers and other professional occupations. Figure 14.2 compares the size of occupational groups in urban and rural counties in Kentucky.[44] Occupational groups which fall along the diagonal line hold the same share of total employment in urban and rural counties; groups above the line comprise a larger share of employment in rural counties and groups below the line comprise a larger share of employment in urban counties. The group farthest above the line is operators, fabricators and laborers (Group H)—blue-collar occupations which generally require few skills and pay low wages. In 1990, 24 percent of the rural workforce was employed in this occupational group, compared to only 16 percent of the urban workforce. Rural areas also have a higher percentage of precision production, craft and repair occupations (Group C), which are higher paying, higher skilled blue-collar occupations. On the other hand, the highest paying, highest skilled jobs—executive, administrative and managerial occupations (Group E) and professional specialty occupations (Group G)—account for a significant share of employment in urban areas. These occupations comprise a smaller share of employment in rural areas.

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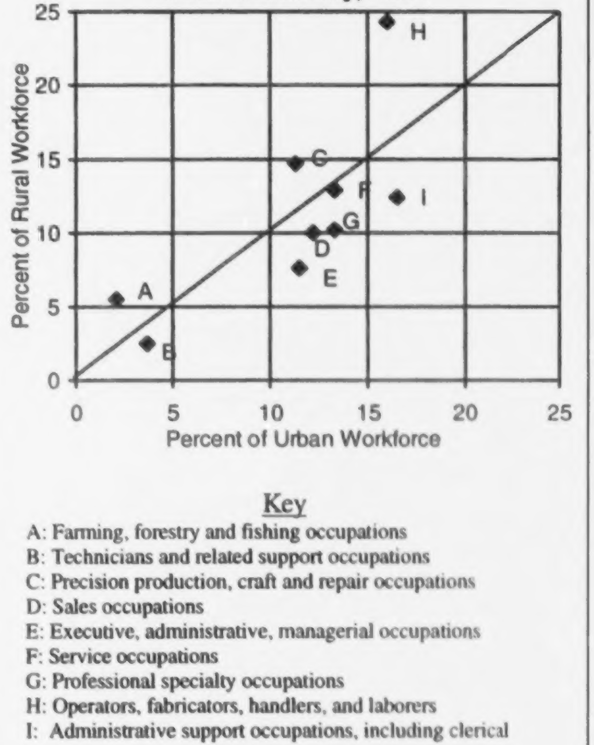
[44] There are many ways of classifying counties on a rural-urban scale. If the U.S. Bureau of the Census includes a county in a metropolitan statistical area (MSA), we classify it as urban. Otherwise, we classify it as rural.

FIGURE 14.3
Occupational Groups in Rural and Urban Kentucky, 1990



Source: Data from U.S. Bureau of the Census

From 1980 to 1990, the growth rates for certain occupational groups were quite similar in urban and rural counties. Technicians and related support occupations, sales occupations, and professional specialty occupations grew at about the same rates in rural and urban counties. What makes the similarities in occupational growth rates remarkable is the fact that aggregate population in urban counties increased while in rural counties it fell.

But beneath the similarities in growth rates for some occupational groups, differences—big differences—exist. In sales occupations, for example, jobs increased just as fast between 1980 and 1990 in rural counties as in urban counties, yet cashiers accounted for 43 percent of the new sales occupations in rural counties and only 23 percent in urban counties. The rest of the new sales jobs went to supervisors and proprietors of sales companies, sales representatives for commodities and finance, and other sales occupations. Professional specialty occupations also increased at approximately the same rate in urban and rural counties, yet engineers and natural science occupations (which is a sub-category of professional specialty occupations) grew 22 percent in urban counties and only 2 percent in rural counties. Urban counties also had a significantly faster increase in the number of doctors, dentists and other health diagnosing occupations (another sub-category of professional specialty occupations).

Perhaps nowhere is the contrast between rural and urban counties more apparent than in the growth of service occupations and executive, administrative and managerial occupations. Between 1980 and 1990, rural counties had 60 percent of the state's new service occupations but only 30 percent of the state's new executive, administrative and managerial occupations.

The Future of Work in Kentucky

Clearly, there are fundamental changes at work in the economy. High-skill workers are highly valued, and their earnings reflect that. Wages are growing more unequal. As technology and trade compel corporations to restructure and enable manufacturing to produce more goods with fewer workers, business services and personal services are growing quickly. What does all of this mean for the future of work?

The spread of technology has made professional and technical workers increasingly productive and, as MIT economist Olivier Blanchard notes, has increased the relative demand for these workers faster than the relative supply. On the other hand, trade and technology are working to shrink manufacturing employment while personal services industries boom. Thus less-skilled workers must increasingly seek employment in service occupations, which do not pay nearly as well as many of the blue-collar production jobs they replace. The result: bipolar wage growth. Well-educated workers are earning more, and less educated workers are earning less.

This is obvious when we look at occupational employment growth. In Kentucky and the rest of the nation, professional specialty occupations and service occupations are expected to be the two fastest growing occupational categories. In Kentucky, two out of every five new jobs will be in one of these two categories. Nationally, more than half of all new jobs will be in one of the two categories. Yet professional specialty occupations and service occupations are at opposite ends of the education and skills spectrum. Almost all professional occupations require at least a four-year college degree. Conversely, very few service occupations require postsecondary training, and many jobs require little training whatsoever. Professional specialty occupations also pay much better wages than service occupations.

Marketing and sales occupations will provide about 15 percent of all new jobs in Kentucky and the nation. Many of these occupations pay good wages, and they do not necessarily require extensive schooling or training after high school. Thus, less educated workers may wish to seek employment in sales and marketing. In other occupational categories, Kentucky's executive, administrative and managerial occupations are projected to account for 8.5 percent of all new jobs over the next decade, versus 12.3 percent of new jobs nationally. Blue-collar production occupations are projected to account for 22.3 percent of all new jobs in Kentucky, compared to only 9 percent nationally. Kentucky, like the nation, is projected to have a decline in agricultural occupations.[45]

Technological advances and global trade will put special pressure on states like Kentucky with fewer college graduates and less income. In the past, many kinds of business and personal services had to be based close to the customers, but technology has eliminated many spatial requirements for businesses. Today, companies and individuals can provide instruction, legal services, and even medical care from remote sites. And high-growth companies such as software developers can locate almost anywhere. States with a well-educated populace and a state-of-the-art communications infrastructure will likely be the states with the most competitive business services industries.

Meanwhile, international trade affects some industries intensely, even though its impact on the nation's economy overall may be small (some contend it's quite significant). One such industry affected by trade is apparel manufacturing, which also happens to be the largest manufacturing employer in rural Kentucky. As apparel manufacturing moves to Latin America and Southeast Asia, job loss here could be significant. Thus Kentucky finds itself facing tough competition for high-skill business service jobs, which offer the best new high-wage opportunities, and tough competition for low-skill production jobs, which provide employment for many thousands of Kentuckians.

Corporate restructurings can hurt all workers, but white-collar workers tend to fare better in the aftermath. A number of white-collar employees who are downsized out of a job land on their feet by starting their own consulting or business service company. How do they do it? With a computer and a modem. Others learn new skills and go to work for another company, often at or near their previous salaries. Blue-collar workers typically don't do as well. Because we have an above-average share of blue-collar workers and a below-average share of white-collar workers, more Kentuckians may have to settle for lower wages or part-time jobs after their companies downsize.

The future is not necessarily grim, however. Nicholas Negroponte, the founder and director of the Media Lab at the Massachusetts Institute of Technology, believes that the digital age "has four very powerful qualities that will result in its ultimate triumph: decentralizing, globalizing, harmonizing and empowering," despite the fact that he also foresees added invasions of privacy, data thievery, and, worst, widespread job loss and the disappearance of lifetime employment.[46] The very technology which increases competition for Kentucky businesses can also bring untapped opportunities, particularly for rural areas which now have access to potential customers hundreds or even thousands of miles away. More and more professionals may choose to live in rural areas and do their work at home. The new technology may also make it much easier for people to learn new skills and to continuously upgrade old ones. Jeremy Rifkin points out that those people who do not have private-sector jobs may redirect their energies toward non-profit organizations and charities.

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[45] Kentucky Department for Employment Services. *Kentucky occupational employment outlook and job openings, 1994 to 2005.*

[46] Negroponte, N. (1995). *Being digital.* [On-line] Available: www.obs-europa.de/obs/english/books/nn/ch19epi.htm.

To ensure that Kentucky will not just survive but thrive in the new economy, it is essential that workers and businesses across the community have modern hardware and software which allow them to work and learn and conduct business over the Internet. Furthermore, college and other postsecondary education is absolutely essential.[47] Some high-paying jobs require relatively few skills, but they are scarce. For workers with no special training beyond an ordinary high school diploma, 9 out of 10 job openings during the coming decade will pay low or very low wages. And workers may simply have to get accustomed to less job security. Skill requirements are continuously rising, contingency employment is growing dramatically and fewer businesses offer non-wage benefits.[48] Those workers who will thrive in the future will be those with the personal skills, temperament, and expectations of what it takes to succeed in a more fluid work environment.

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[47] See "Workforce Training Issues" in Section 2 of this volume for a discussion of workforce development trends and needs.

[48] See "Renegotiating the Social Contract" in Section 3 of this volume for a discussion of the changing employer-employee contract.

Kentucky's Coal Industry:
Historical Trends and Future Opportunities

Kentucky contains sufficient coal resources to support mining well into the future, but whether these resources can be economically mined at competitive coal prices will depend on many factors. Some of these factors include:the size and quality of the reserve base; transportation costs; market demand and competition; mining and processing technology advances; and government regulation. In order to ensure the long-term economic viability of Kentucky's coal industry, a careful assessment of these factors should be undertaken.

By Gerald A. Weisenfluh, James C. Cobb, John C. Ferm and Carol L. Ruthven
University of Kentucky

Coal has been produced in Kentucky's two coal fields (Figure 15.1) since the beginning of the 19th century and has been the state's most important mineral resource since that time. In 1994, the coal industry employed more than 24,000 miners, and tax revenues generated from all economic activity related to the industry provided more than 11 percent of General Fund receipts in Kentucky.[1] Today, more than 50 percent of the nation's electricity is generated in coal-fired power plants, and 95 percent of the electricity generated in Kentucky comes from coal. Clearly, demand for coal is strong and will remain so well into the future. Many factors affect Kentucky coal production: the size and quality of the reserve base, market demand and competition, transportation infrastructure, mining and processing technology, and government regulation. Understanding the complex relationships among these factors will help identify future opportunities for continued development of coal resources and realization of the associated economic benefits for coal-producing counties and the state.

Contrasts in eastern and western Kentucky coal resources present different challenges and opportunities for future development. Western Kentucky's coal is generally of greater thickness than that of eastern Kentucky, but has higher sulfur content. Surface access to western Kentucky coal is more limited, and more costly underground mines will be the primary method of extraction. Eastern Kentucky coals are typically thinner and more variable in thickness than those of western Kentucky, but are of higher quality. Greater physiographic relief in the east has provided greater accessibility for near-surface mining. Decisions regarding regulation of emissions from power plants and taxation levels are likely to affect Kentucky's coal fields in different ways, but as of this writing the outcomes of these issues are not known.

Increasing competition from the western United States in the steam coal market will present a significant challenge for Kentucky coal mines. Innovations in mining, processing, marketing, and transportation can position companies for future success. One such opportunity will be identification of specialty steel and chemical markets, which attract significantly higher prices for coal with desirable quality characteristics. In order to better prepare for future needs, an understanding of factors affecting past coal production is essential.

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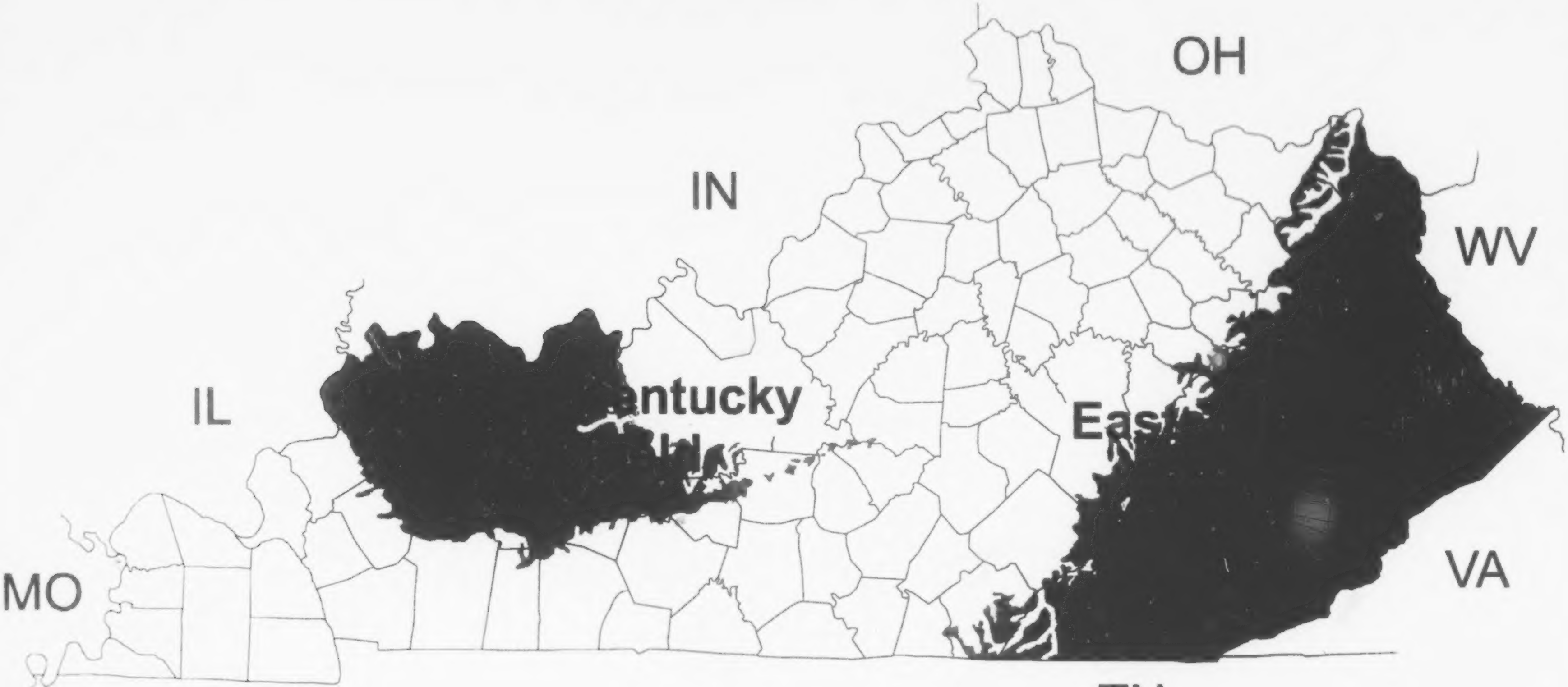
[1] Oral communication, Kentucky Department of Employment Services.


OH
IN
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entucky
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Source: Kentucky Geological Survey

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FIGURE 15.1
Kentucky's Bituminous Coal Fields

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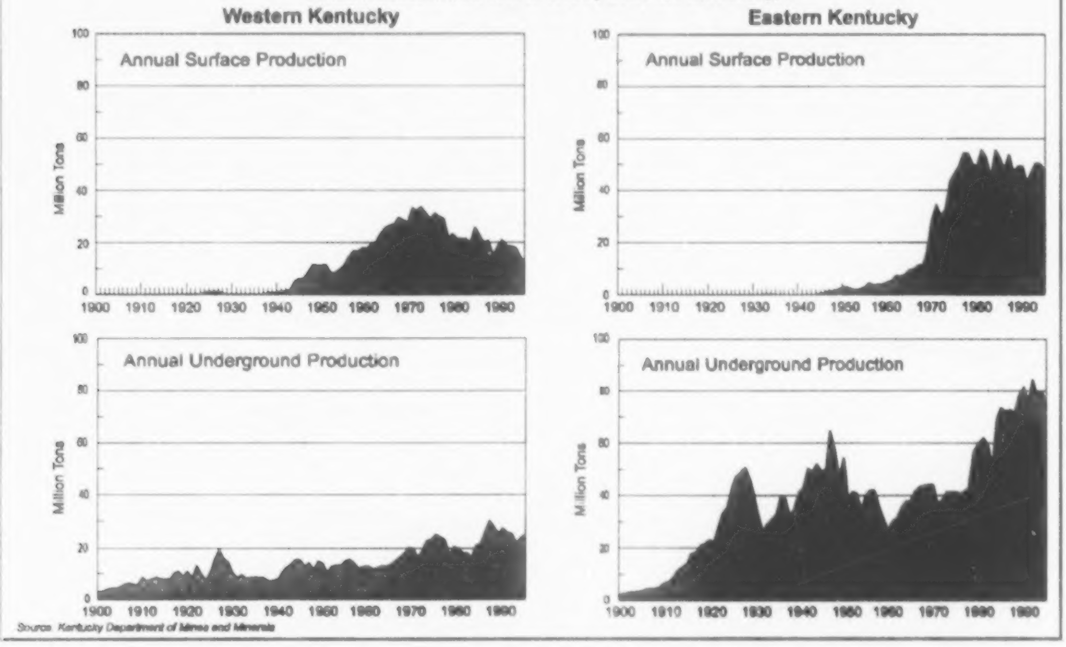
Historic Trends in Coal Production

Coal was first produced in eastern Kentucky in 1790 and by 1820 in western Kentucky. Early mining resulted in only small tonnages, mainly for local use. Low production levels were primarily a function of modest demand and lack of efficient transportation routes. Regional usage of coal was primarily for steam locomotives, manufacturing, and domestic fuel. One of the earliest commercial markets was for cannel coal, a high-Btu product used for domestic heating. Cannel mines were developed in western Kentucky and in the outlying counties of the Eastern Kentucky Coal Field, but there were no efficient transportation routes to outside markets from the main part of this field.

The first large production increase occurred in the early 1920s as a result of penetration of commercial rail lines into the eastern coal fields and increased demand for coal for steam locomotives. During the economic depression of the 1930s, demand for coal declined, and with diminished coal production there was little impetus for technological improvement. Until the beginning of World War II, almost all mining in Kentucky was by underground methods, as the technology for efficient surface mining had not yet been applied (Figure 15.2).

FIGURE 15.2
Annual Production from 1900 to 1995 By Coal Field and Mine Type



Source: Kentucky Department of Mines and Minerals

The next significant production increase occurred during the industrial expansion associated with World War II. Large-area surface-mine machines (draglines) were used to develop the relatively flat terrain of the Western Kentucky Coal Field, and this would be the dominant method of mining in this region until the mid-1980s. Surface mine production for western Kentucky has steadily decreased from 1970 to the present (Figure 15.2a). This trend may be due to diminished surface-mineable reserves, as surface access to mineable coals in western Kentucky is limited to the periphery of the coal field, much of which has been previously mined.

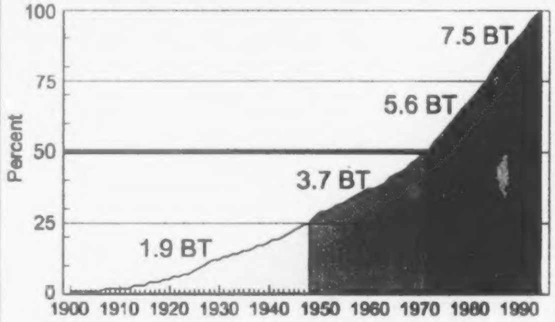
In eastern Kentucky, growing demand for coal in the 1940s resulted in increased underground mining (Figure 15.2d), but the steep slopes of this mountainous area prevented development by the early surface-mining equipment. A shift toward surface-mine production did not occur until the 1970s. This was a response to developments in contour surface mine technology, unusually high demand for coal as a result of the OPEC oil embargo, and increasing underground mine costs. However, the trend toward increasing surface-mine production quickly reversed, as extensive production diminished high-quality surface reserves and the regulatory costs of surface mining increased in 1977 after passage of the Federal Surface Mine Control and Reclamation Act. Since that time, eastern Kentucky surface mine production has shown a slight decline, whereas underground mining has increased significantly (Figures 15.2b and 15.2d).

Changes in coal utilization within the last half of this century have had a significant impact on the production and marketing of coal from Kentucky. First, traditional fuel markets and coal for steam locomotives virtually disappeared, leaving electric power generation and coking coal for the steel industry as the principal markets. Eastern Kentucky underground mine production was especially influenced by large-scale replacement of steam by diesel locomotives in the period between 1950 and 1960 (Figure 15.2d). This was followed by a shift from northern fuel markets to southern utility markets. In addition, the market for coking coal was greatly diminished by downsizing in the steel industry in the 1970s. Existing and anticipated clean air legislation also affected the marketing of both high- and low-sulfur coal. Initially, demand for high-sulfur coal diminished, but as electric power-generating facilities with scrubbing technology became available, this demand returned. More recently, Kentucky coal has been faced with strong competition from inexpensive low-sulfur coal from the Powder River Basin in Wyoming and Montana. This coal is now capturing some traditional utility markets for Kentucky coal located in the midwestern and eastern United States.

As a result of major technological advances in mining techniques, more coal is being mined in Kentucky than ever before, and this is being accomplished with a smaller number of mines and fewer employees. Over half of all coal produced in the state has been extracted only within the last 25 years (Figure 15.3), and the question arises whether or not this level of production can be profitably sustained in the future. The answer will depend on a thorough understanding of the current reserve base; mining, transportation, processing technologies; the nature of future markets; and the impact of regulations. The socio-economic impact of these changes in Kentucky coal mining will also require careful assessment because of the economic impact that mining jobs have for the state.[2]

FIGURE 15.3

Annual cumulative percent of Kentucky coal production



Source: Kentucky Department of Mines and Minerals

Transportation and Marketing

Two modes of coal transportation dominate Kentucky's supply infrastructure and represent a substantial portion of the cost of delivered coal. More than three fourths of mined coal is transported by truck from the mine site to either preparation or loading facilities. This is true for both coal fields, but direct rail shipment is more practical in western Kentucky because there are fewer mines and the infrastructure is better developed. Coal transportation to the end user (principally utilities) is approximately two thirds by railroad and the balance by barge or truck. Rail access for specific areas is typically limited to a single carrier, and where multiple carriers serve a region, rates are reported to be somewhat different. Deregulation of rail rates, implemented by the Federal Staggers Rail Act of 1980, is generally believed to have been disadvantageous for eastern U.S. coal producers, as the resulting reduction in rail shipping rates has increased competition from the western United States. Over the long term, Kentucky's coal producers may have to seek alternative transportation methods or expand sales of coal for on-site generation of electricity for distribution to distant markets. The latter approach will require an established reserve base and technology for efficient and cost-effective transmission of electricity.

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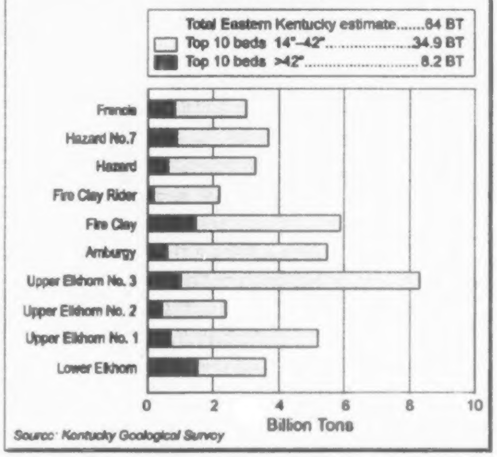
[2] See Geroyan, R.I., Teeters, D.D., Plis, M.N. (1994). *Economic impact analysis of the coal mining industry in Pike County, Kentucky*. U.S. Bureau of Mines, Coal Recoverability Series (Open-File Report 09-94). Also refer to Straus, C.M., Thompson, E.C., Haywood, C.F. (1996). *The effects of the Kentucky coal industry on the economy of the Commonwealth*. Lexington, KY: University of Kentucky Center for Business and Economic Research.

The impact of transportation costs is exacerbated by the low average sales price for steam coal. Low profit margins have forced companies to increase production and, at the same time, reduce employment of miners and support staff. Alternative marketing strategies to target higher profit margins have been successful for a few companies, but they require detailed knowledge of coal quality characteristics and typically result in low-volume contracts in the steel and chemical industries. Alternative markets do, however, have sales prices 2 to 10 times the value of steam coal. The advantage of this marketing strategy is that mining and transportation costs are reduced because fewer tons are required to generate an acceptable profit margin. Unfortunately, little information is known about these markets and whether they have the potential to reduce the current reliance on the steam coal market.

Coal Resource Estimates

The basis of current estimates of Kentucky coal resources is the 1:24,000-scale geologic mapping conducted between 1960 and 1983 by the Kentucky Geological Survey and the U.S. Geological Survey. These maps and coal data represent the nation's most complete and accurate geographic and stratigraphic information about coal and have established Kentucky as a leader in coal-resource characterization. Estimates for 100 coal beds suggest original in-place resources of 64 billion tons (BT) for eastern Kentucky.[3] Western Kentucky has 33 coal beds that amount to 40 BT.[4] The larger eastern resource results from its greater area and number of coal beds. The resource estimates are categorized by bed thickness and, in some cases, overburden height, which are important factors in determining mining methods. In addition, resources are tabulated on the basis of proximity to points of coal thickness measurement. The distribution and characteristics of coal resources among individual coal beds and geographic areas are not uniform, and this has had a definite impact on coal production trends for specific areas. Kentucky's two coal fields are distinctly different in terms of the thickness and quality of coal resources and their accessibility for mining. These factors will play an important role in future coal development.

FIGURE 15.4
Distribution by thickness for the top 10 coal beds in eastern Kentucky



Source: Kentucky Geological Survey

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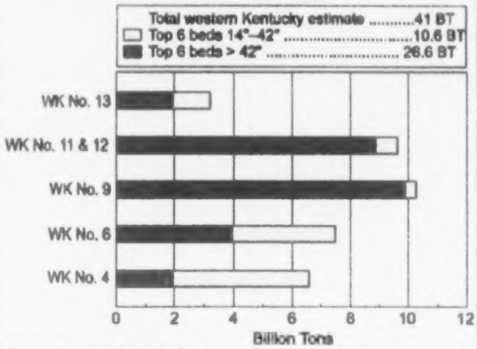
[3] Refer to: Brant, R.A. (1983). Coal resources of the Princess District, Kentucky: University of Kentucky Institute for Mining and Minerals Research, Energy Resource Series; Brant, R.A. (1983). Coal resources of the Southwestern District, Kentucky: University of Kentucky Institute for Mining and Minerals Research, Energy Resource Series; Brant, R.A., Chesnut, D.R., Frankie, W.T., Portig, E.R. (1983). Coal resources of the Big Sandy District, Kentucky: University of Kentucky Institute for Mining and Minerals Research, Energy Resource Series; Brant, R.A., Chesnut, D.R., Frankie, W.T., and Portig, E.R. (1983). Coal resources of the Hazard District, Kentucky: University of Kentucky Institute for Mining and Minerals Research, Energy Resource Series; Brant, R.A., Chesnut, D.R., Frankie, W.T., Portig, E.R. (1983). Coal resources of the Licking River District, Kentucky: University of Kentucky Institute for Mining and Minerals Research, Energy Resource Series; Brant, R.A., Chesnut, D.R., Portig, E.R., Smath, R.A., (1983). Coal resources of the Upper Cumberland District, Kentucky. (University of Kentucky Institute for Mining and Minerals Research, Energy Resource Series). Lexington, KY: University of Kentucky Institute for Mining and Minerals Research.

[4] Smith, G.E., Brant, R.A. (1978). *Western Kentucky coal resources.* (University of Kentucky Institute for Mining and Minerals Research Energy Resource Series). Lexington, KY: University of Kentucky Institute for Mining and Minerals Research.

Although Kentucky's potentially mineable beds are numerous, only a relatively few have significant coal resources. Further, these resources are not uniformly distributed throughout the coal fields. In eastern Kentucky, 25 percent of the original resource is associated with the Upper Elkhorn Nos. 1, 2, and 3 beds and 67 percent with the top 10 coal beds (Figure 15.4). In western Kentucky, 90 percent of the resource occurs within six coal beds (Figure 15.5). These 16 coal beds have also been the leading producers throughout the state's history. Not all areas of each coal field are favored with abundant coal. Of the 35 coal counties in eastern Kentucky, the southeastern 10 counties contain 75 percent of the resource, and Pike and Harlan Counties have 30 percent of the estimated coal. In western Kentucky, only 8 of the 17 coal counties have more than 1 BT, and 70 percent of the resource is located in four counties.

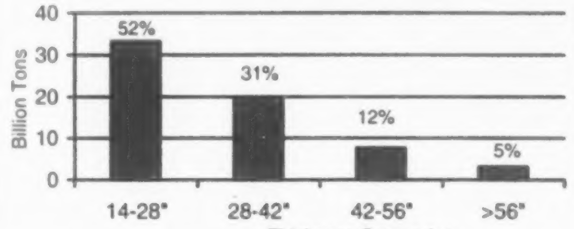
FIGURE 15.5
Distribution by thickness for the top 6 coal beds in western Kentucky.



Source: Kentucky Geological Survey

Eastern Kentucky has more resources in thin beds than does western Kentucky. In eastern Kentucky, more than 50 percent of the coal is estimated to be less than 28 inches thick. Only two beds are believed to contain more than 1 BT of coal with a thickness greater than 42 inches, the Lower Elkhorn and Fire Clay (Figure 15.4). The total amount of coal greater than 42 inches in thickness comprises only 17 percent of the entire estimate for eastern Kentucky (Figure 15.6), and much of this is associated with the top 10 beds. In contrast, only 5 percent of western Kentucky's estimate is less than 28 inches thick, and 69 percent is greater than 42 inches thick (Figure 15.7). All six of the commonly mined coals in western Kentucky contain more than 1 BT of resources (Figure 15.5). These differences in coal bed thickness in the coal fields are important because they have implications for the type of technology necessary to expand the economic resource base.

FIGURE 15.6
Proportional Coal Tonnage for All Eastern Kentucky Coal Beds



Source: Kentucky Geological Survey

All coal mined in Kentucky is of bituminous rank, but other quality parameters of coal beds are different in the two coal fields. Western Kentucky coals tend to be of moderate to high sulfur content and moderate Btu value. Eastern Kentucky is believed to contain one of the largest resources of low-sulfur, high-Btu coal, although moderate- to high-sulfur coals are also mined. Ash contents vary greatly, and recent experience in eastern Kentucky suggests that the remaining resource will have higher levels of ash than that previously mined.

Coal Availability

A National Coal Council report outlined a number of weaknesses in traditional resource and reserve base estimates.[5] Foremost among these was a lack of accounting for regulatory and technological factors that limit resource development. The council concluded that the existing estimates overstate the amount of coal that can actually be mined. The factors that restrict mining include competing land uses (e.g., state and national parks, municipal areas, cemeteries, and streams) and geologic and engineering constraints (e.g., coal of insufficient thickness, unstable roof conditions, proximity to adjoining underground mines). In order to address these problems in the previous resource assessment methodology, a national coal availability program was established, and the Kentucky Geological Survey developed the original pilot project.[6]

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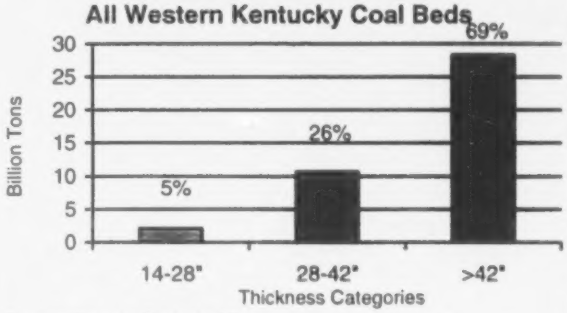
[5] Blackmore, G., Ehrenreich, S.B. (1987). *Reserve data base report of the National Coal Council: Advisory report to the U.S. Department of Energy*. Arlington, VA: Author.

FIGURE 15.7
Proportional Coal Tonnage for All Western Kentucky Coal Beds



Source: Kentucky Geological Survey

Land-use (regulatory) restrictions may be locally important, but their impact on a regional scale is small in Kentucky. One reason is that the coal fields are in rural areas, and mineable coals tend to be remote from most competing land uses. Many of the restrictions that do apply have been dealt with to minimize loss of reserves. Technological limitations have a significant impact on mineability, and the principal factor is the inability to extract thin coal seams with available underground equipment. This is particularly true in eastern Kentucky, where a large proportion of the resource is less than 28 inches thick. Western Kentucky has areas that may be too deep to mine or are too structurally complex, and there are some mine blocks with insufficient acreage for economic development. Both regions have some resources that have been sterilized due to mining of adjacent beds, but this is not a widespread problem. Together these technological limitations may affect more than 50 percent of the original resource.

Directions for Future Coal Resource Studies

Future regional coal resource studies should consider the unequal distribution of coal resources and the effects of technological limitations on mining. Most of the state's coal resources are contained in a small number of beds, and these should be emphasized in new studies. There is evidence that reserves in several of the principal beds may be significantly diminished, and if this is true, new resources of comparable quality must be identified and characterized. The availability of coal for mining is greatly affected by the geological variability of the coal beds. The data necessary to document this variability are, for the most part, not publicly available for regional resource studies, and as a result the impact of technological limitations may be underestimated. An effort must be made to acquire sufficient data to define the limits of mining for specific coal bodies. Finally, public data concerning the quality of mineable coals, particularly trace element chemistry, are insufficient to prepare detailed estimates of coal quality for beds to be mined in the future. The latter information will be crucial for the successful development of Kentucky's remaining resources.

Impacts of Regulation and Taxation

Regulations at the local, state and federal levels have an impact on the mining, transportation, and use of Kentucky coal. A number of regulatory and taxation issues are particularly important, and their future impact is uncertain: the effects of Clean Air Act Amendments on demand for Kentucky coal; liability for unreclaimed surface mines; regulatory flexibility to permit changes in post-mine land use; and the outcome of changes in the state's workers' compensation law.

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[6] Eggleston, J.R., Carter, M.D., Cobb, J.C. (1990). *Coal resources available for development—A methodology and pilot study*. (U.S. Geological Survey Circular 1055). Washington, DC: U.S. Geological Survey.

The Clean Air Act Amendments of 1990. Title III of the Federal Clean Air Act Amendments of 1990 concerns hazardous air pollutants (HAPs). There are a total of 200 substances classified as hazardous air pollutants, and 11 of these occur in trace amounts in coal. Industrial companies generating these substances who are deemed to be "significant emitters" are required to use available technology to the fullest possible extent to reduce emission of HAPs. At the present time, coal-burning power plants are not considered to be significant emitters. However, a study has been under way by the federal Environmental Protection Agency (EPA) for a number of years to collect information to address this issue. A two-year extension is being sought to allow more data collection, particularly with respect to arsenic and mercury. At the time of the writing of this paper, no official position had been taken by the EPA with regard to additional regulation of coal burning.

Some utilities are reportedly consuming coal with sulfur contents substantially below the regulated levels in order to exceed the requirements of the Clean Air Act and accumulate credits for sulfur dioxide emissions in the future. This trend, if it continues, may affect the long-term availability of low-sulfur, high-value coal in eastern Kentucky.

Regulatory Issues Relating to Surface Mines. Most areas that were surface mined prior to the Federal Surface Mine Control and Reclamation Act of 1977 contain unreclaimed surface mines. Some companies are considering remining such areas because of increased capabilities for overburden removal. However, reclamation liabilities, and their associated costs, of the pre-existing mines will be a factor. It has been suggested that this has been a deterrent to development of a significant amount of reserves adjacent to these unreclaimed surface mines. The magnitude of this problem, however, has not been quantified on a statewide basis.

Post-mine land-use changes can greatly enhance the long-term economic development of the coal fields. This is particularly true in eastern Kentucky where flat land suitable for development is scarce. Examples of land-use changes include sport and wildlife sites, development areas for industry, government and residential facilities, airports, and agricultural uses. In Kentucky, all of these applications have proven to be successful alternatives to restoration of mine sites to the original slope of the land. Moreover, in many cases, they result in an environment that is more stable than pre-mine conditions. Design of the sites must be carefully planned to account for the physical and hydrologic conditions of the area. When this is accomplished, post-mine land uses help provide a means of sustaining local economies after mining has been completed.

Workers' Compensation. The high costs of workers' compensation levees are cited by many coal companies as a major impediment to the mining industry in Kentucky. The state's assessment of this tax is reportedly significantly higher than that of surrounding states. Legislative changes in the workers' compensation law will also clearly affect the coal industry.

Extraction and Processing Technology

Underground Mining. Recent trends in coal production suggest that underground mining will be an increasingly important recovery method for Kentucky coal. Currently, about 60 percent of underground mines in the state use continuous mining systems. Longwall systems, which are more productive and efficient, account for less than 10 percent of production. Low usage of longwalls in western Kentucky is probably due to the high capital investment for the equipment, as well as lower sales prices for the higher sulfur coal. In eastern Kentucky, low usage is mainly a function of smaller mines and more variable and thinner coal beds. Another method, highwall mining, requires surface access, but is actually a remote underground mining system. Highwall miners have had mixed success at Kentucky mines, but may be effective under proper geologic conditions. Each of these mining systems will have continued use in the future, but should be used with appropriate geologic and engineering planning.

The technological challenges for underground mining differ for the two coal fields. A substantial portion of western Kentucky's reserves are in beds greater than 42 inches thick, but at depths greater than 1,000 feet. Existing mining equipment is probably adequate to extract this resource, but ground control and mine planning methods should be enhanced to allow for safe mine development at greater depths. In contrast, thinner, more variable coal beds will be crucial in future coal mining in eastern Kentucky, where improvements in thin-seam and remote-mining technology will be important for converting resources into reserves.

Surface Mining. There is substantial evidence in both coal fields that extensive mining of surface reserves has affected production, but it is uncertain whether technological advances in surface mining equipment will have a major impact in the future. Regulatory constraints associated with surface mining are thought to have reduced the feasibility of mining some reserves. Few would want environmental standards relaxed, but flexibility in post-mine land use could have a beneficial effect on the coal fields.

Coal Preparation Technology. Some of the most important advances affecting coal marketing involve processing. Many modern preparation facilities are equipped with in-line analyzers that constantly monitor the quality of coal entering and leaving the plant. Sophisticated distribution systems permit the separation, by size and quality, of coal products destined for a variety of customers with specific needs. These methods are not without costs, and improvements in processing technology should focus on achieving cost efficiency. In particular, inexpensive preprocessing for ash removal from high-ash beds will be important in eastern Kentucky.

Coal-Bed Methane Extraction. Future potential may exist in Kentucky for extraction of methane gas from coal beds that could be used as an energy byproduct of the coal resource. Methane (CH_4) is a naturally occurring gas associated with coal beds and has been economically recovered from coal in some coal basins. Significant commercial production of coal-bed methane occurs in Alabama and New Mexico. In areas adjoining the Eastern Kentucky Coal Field (i.e. Virginia), methane has long been extracted from coal beds prior to mining for safety reasons and there are current activities for commercial development. The possibility of coal-bed methane production in Kentucky is supported by the existence of some mines with histories of methane problems and successes of recent test holes.

Directions For Future Technology. New technologies are vital for the future extraction of Kentucky's coal resource. A detailed knowledge of the physical and chemical character of the beds that will be mined will be critical in the development of these resources. The value of sophisticated processing techniques is enhanced if the variability in quality of the feedstock can be predicted and controlled. Acquisition of this knowledge could be facilitated by cooperation among private industry, public agencies, and research institutes. Industry has extensive data and a solid understanding of mining and processing problems, but often lacks the financial resources to undertake detailed geologic and engineering studies and to invest in development of new technology. Public agencies and universities have expertise and technology that could be used in a cooperative effort with industry to address these issues.

Summary

The Kentucky coal industry during fiscal year 1994–95 produced 162 million tons of coal with a gross value of $3.9 billion.[7] Employment and revenue generated by industries supporting or servicing coal mining are vital to the coal-producing counties. The coal industry directly employed 24,133 miners earning $942.8 million in wages and salaries in 1994[8]. All economic activity related to the coal industry generated $544 million in state tax revenues, representing more than 11 percent of the fiscal year 1994–95 General Fund receipts of $4.6 billion.[9] Of the $544 million in state taxes, $180 million were severance taxes. Under provisions of the Local Government Economic Assistance Fund established by the General Assembly in 1980, a portion of coal severance taxes is returned to counties.

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[7] Kentucky Coal Marketing and Export Council and the Kentucky Coal Association. (1995). *Kentucky coal facts, 1995–1996* (pocket guide). Also refer to Straus, et al.

The economic contribution to coal counties and the state economy and General Fund are clearly substantial. In order to ensure the long-term economic stability of these counties and continued state revenues from the coal industry, a careful assessment of factors affecting production should be undertaken. Historical trends are instructive—production rates have fluctuated as a result of changes in demand for coal, availability of reserves, access to transportation infrastructure, and development of new mining and processing technology. These factors will continue to affect the economic strength and competitiveness of the industry in the future.

Kentucky contains sufficient coal resources to support mining well into the future, but whether these resources can be economically mined at competitive coal prices will depend on other factors. Most of the resource base is associated with relatively few coal beds. Some of these coal beds have been extensively developed in specific areas, and this may affect employment demographics in the near future. The resources that remain are more likely to be thinner, of poorer quality, or more challenging in terms of mining conditions. At the same time, surface mining will continue to decline in importance relative to more costly underground methods.

Future mining of less accessible and more complex coals and highly sophisticated processing and utilization cannot be achieved without an improved understanding of Kentucky's coal resources. Knowledge of the geologic characteristics associated with thin and deep seams will be essential to develop the necessary technology to extract and process these resources. Detailed chemical characterization of coals will provide the data necessary to assist industry to develop strategies for compliance with future regulation of combustion emissions. Perhaps of greater importance, characterization will provide valuable information about new techniques required to further process coal for specialty, high-value markets and will help identify the coal reserves with the greatest potential for value-added processing.

Most of the coal mined in Kentucky is sold out of state for electric power generation. Recently, competition in this market has begun to shift from a regional to a national basis. This added competition has further depressed coal prices and resulted in low profit margins. Profitability has become increasingly dependent on producing larger quantities of coal. An alternative to this marketing strategy is to identify specialty uses of coal, existing and novel, which may generate significantly higher prices. While such efforts will not likely replace dependence on the steam coal market, they can be used to position companies for success in an increasingly competitive market and may also provide international market opportunities.

The coal resource base in Kentucky is substantial. It has supported extensive mining activity throughout this century and will support mining well into the future. The technology used to mine and process the resource, the commodities produced, and the markets pursued in the future will likely be different from those in the past. Over time, emphasis will likely shift toward mining thin coal beds and deeper coal deposits. Less emphasis will likely be placed on surface mining and more emphasis will be placed on underground mining. Coal may be viewed not only as a vital source of energy for electric power generation and combustion, but also as a valuable upgraded product that can be used in high-value, specialized markets in the chemical and other industries. As new market opportunities are identified and new technology employed in the mining and processing of coal, there should be significant opportunities to capture the full economic benefits of the substantial remaining coal resources in Kentucky.

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[8] Oral communication, Kentucky Department of Employment Services.

[9] Straus, et al.

The Volatile and Uncertain Outlook for Tobacco in Kentucky

Efforts to diversify sources of farm income have met with mixed success in Kentucky, with many farmers extremely dependent upon a crop with an uncertain future. Despite serious issues facing Kentucky tobacco farmers, such as the regulatory and legal threats the industry faces, an expanding international market for U.S. tobacco and tobacco products has enabled the industry to survive and in some areas actually grow during the 1990s. While the structure of tobacco farming in Kentucky will likely change significantly in the near future, a slowly declining domestic market coupled with overseas demand patterns suggest that the Kentucky tobacco industry will still be a viable economic sector in the years to come.

By William M. Snell
University of Kentucky

Tobacco has long been an important agricultural commodity for Kentucky. But, it also has been an extremely controversial one. The tobacco debate has intensified during the 1990s. Existing and proposed regulations and restrictions, excise tax increases, the smoking and health debate, social attitudes towards tobacco use, legal suits, and international competition provide much uncertainty for the future of the tobacco program, tobacco farming, and many of Kentucky's rural economies. Despite the serious issues facing Kentucky tobacco farmers, an expanding international market for U.S. tobacco and tobacco products has enabled the industry to survive, and in some areas, actually grow during the 1990s. Last year the U.S. tobacco industry established record highs for cigarette output, cigarette exports, and trade balance. Leaf imports were down considerably from earlier years, and growers received record high net market prices for their crop in 1995. Despite these achievements, though, many dark clouds remain above the tobacco industry. This chapter reviews recent trends in the Kentucky and U.S. tobacco industries, overviews the current U.S. tobacco situation and outlook, and discusses the potential implications of the current political, economic and legal issues facing the state's number one agricultural commodity.

Kentucky's Tobacco Economy

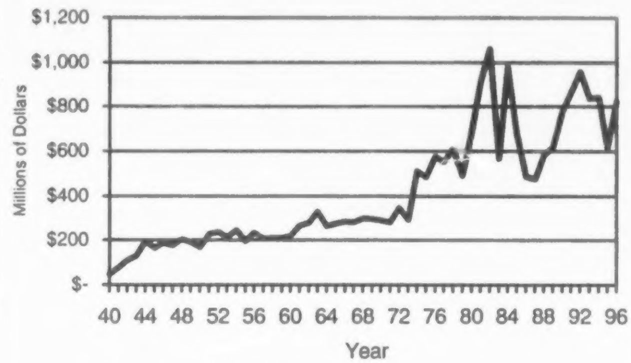
Much of Kentucky's rural economy has developed around the tobacco industry. Tobacco is grown in 119 of the Commonwealth's 120 counties. More than 100 Kentucky counties will have tobacco sales exceeding $1 million this year. In several Kentucky counties, tobacco farming directly accounts for more than 10 percent of the total personal income from all income sources. According to a U.S. Department of Agriculture (USDA) study, 17 of the nation's 20 most tobacco-dependent counties are in Kentucky, most of them located in regions with limited off-farm employment opportunities.

Kentucky is the largest producer of burley and dark tobaccos and the nation's most tobacco-dependent state. While North Carolina grows more tobacco than Kentucky, tobacco accounts for a larger percentage of agricultural income in Kentucky relative to North Carolina. Tobacco generally accounts for 40 percent to 50 percent of Kentucky's crop receipts and 20 percent to 30 percent of Kentucky's total agricultural cash receipts. The 1992 Census of Agriculture revealed that tobacco accounts for more than 40 percent of the net cash return from agricultural sales in Kentucky.

Unlike other facets of agriculture, tobacco has generally remained connected with small family farms. According to the latest (1992) Census of Agriculture, 59,000 of Kentucky's 89,000 farms grow tobacco. This represents nearly 50 percent of the total number of farms growing tobacco in the United States. The average tobacco farm in Kentucky possesses 113 acres, with fewer than five acres of tobacco grown. While consolidation has been occurring over the past couple of decades, the concentration of tobacco farms has occurred at a slower pace in Kentucky, relative to other tobacco states.

Kentucky's tobacco farmers have experienced significant adversity over the past three decades. Government regulations, health findings, taxation, and foreign competition have continued to threaten the existence of the Kentucky tobacco industry. Despite these challenges, the Kentucky tobacco industry has survived—and actually grown. The value of tobacco production in Kentucky has averaged $816 million during the 1990s (1990-1995), compared to average of $705 million during the 1980s, $443 million during the 1970s, and $250 million during the 1960s. Based on projected production and prices, the 1996 Kentucky tobacco crop will likely again exceed $800 million.

FIGURE 16.1
Value of Kentucky Tobacco Production



Source: KY Agricultrual Statistics, 1996; estimates by author

Tobacco's economic impact reaches beyond the farm gate. Tobacco farmers purchase a wide variety of goods and services associated with producing the crop, and they utilize the cash generated from the crop to generate additional economic activity in local agricultural and nonagricultural businesses. Total income multipliers reveal that every $1 million increase in Kentucky tobacco income generates a $3.7 million total (direct and induced) effect on the state's economy. Multipliers reveal that Kentucky tobacco production and processing accounts for around 5.7% of the state's total economy. Local, state and national governments receive more than $15 billion of tax revenues from the sale of tobacco products. (Kentucky's net excise tax collections from tobacco product sales totals around $18 million.) In addition, the tobacco industry contributes around $6 billion to the country's trade mix, which is currently in a deficit exceeding $100 billion annually. Thus, the economic viability of tobacco production in Kentucky (and surrounding states) reaches beyond the state's agricultural economy.

U.S. Tobacco Demand/Consumption Trends

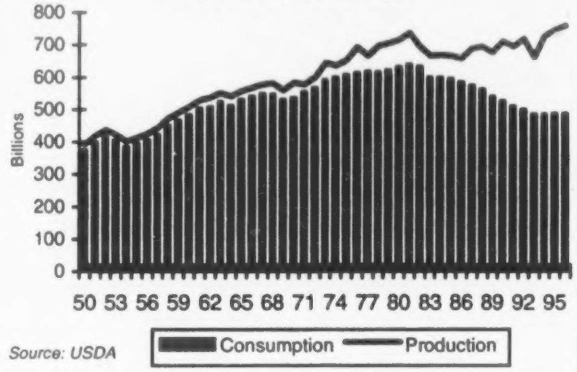
Approximately 93 percent of the tobacco produced in Kentucky is burley tobacco, which is used primarily in the manufacturing of cigarettes. The remaining 7 percent of Kentucky's tobacco production is comprised of dark air- and dark fire-cured tobaccos, which is used mainly in smokeless tobacco products. Smokeless tobacco consumption in the United States has been increasing in recent years, which has certainly benefited the agricultural economies in several western Kentucky counties.

U.S. cigarette consumption peaked in the early 1980s. During most of the 1980s and early 1990s, cigarette consumption in this country declined 2 percent to 3 percent annually. Despite an escalated antitobacco movement, U.S. cigarette consumption leveled off in 1995 and appears to be relatively flat in 1996. Stabilizing domestic cigarette consumption and soaring U.S. cigarette exports resulted in U.S. cigarette production establishing a record high level in 1995, which is expected to be surpassed in 1996.

Higher cigarette output has increased the leaf requirements of domestic manufacturers. Demand for domestic burley leaf was severely hampered during the early 1990s with the increasing use of imported tobacco to supply an increasing market for generic (value priced) cigarettes. However, the combination of domestic content legislation (requiring domestic manufacturers to use at least 75 percent U.S.-grown tobacco in their blends or face significant financial penalties), increasing cigarette output, and a reduction in the market share of generic cigarette sales has strengthened the demand for domestic tobacco. Although (in response to a GATT ruling) the domestic content law was replaced in 1995 by a much less restrictive tariff rate quota system, imports, while increasing, currently remain well below the record high levels of the early 1990s.

In addition to improvements in domestic demand for U.S. burley, export demand for U.S. burley is also on the rise. Tight world burley supplies coupled with an increasing demand for blended cigarettes worldwide has enabled U.S. burley exports to rebound in 1996. Collectively U.S. burley domestic use and export demand are expected to total near 600 million pounds for 1996—approximately the average level over the past 25 years.

FIGURE 16.2
U.S. Cigarette Consumption and Production, 1950-1996

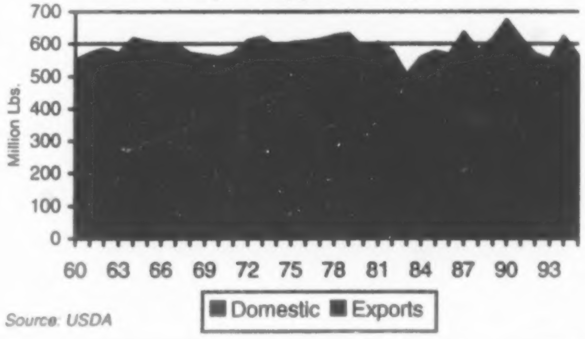


Source: USDA

A Closer Look at International Competition

The international market presents both challenges and opportunities for the Kentucky tobacco industry. Despite increasing antitobacco efforts overseas, worldwide consumption of tobacco continues to grow—and it is growing more for burley tobacco than other tobacco types. This increasing world market has spawned much competition overseas, especially in certain developing countries (e.g., Brazil, Argentina, Malawi, and Zimbabwe) where tobacco represents a major source of income and foreign exchange. While the volume of U.S. burley tobacco exported has increased over the years in response to a growing worldwide demand for the American-blended cigarette, the United States has experienced a significant decline in world market share. Much of this can be attributed to increased price and quality competition from foreign tobacco-producing nations.

FIGURE 16.3
U.S. Burley Disappearance, 1960-1995



Source: USDA

The current tight supply of burley tobacco in the world market is putting upward pressure on world burley prices. This situation, coupled with stable U.S. burley prices is resulting in an improved U.S. burley price competitive position. However, anticipated production increases overseas will likely cause the U.S./foreign price differential to increase in the near future. Thus foreign burley-producing countries will likely be able to continue to increase their exports relative to the United States amidst this price-conscious world tobacco market environment. But this growth will likely occur in markets that presently, and for the foreseeable future, cannot afford U.S. tobacco. Thus, the United

States may be able to sustain a consistent, dependable—but not growing—niche market for high-quality burley tobacco. This assumes that the United States continues to have adequate export supplies available, addresses quality perception issues, and constrains export price growth.

On the domestic front, farm leadership has reason for concern over future import levels. The tariff rate quota import policy will provide domestic manufacturers with an opportunity to import a considerably higher level of burley and flue-cured tobacco than under the domestic content law. This relaxed trade policy environment coupled with increasing foreign burley supplies at more competitive prices will undoubtedly cause imports to increase in the near future. This situation will be exacerbated by U.S. burley production shortfalls relative to the quota.

Policy Issues

Increasing international competition continues to force farm group leaders and policymakers to evaluate the provisions of the tobacco program. The U.S. tobacco program has arguably been one of the most successful agricultural programs ever administered by the U.S. Department of Agriculture. Unlike other agricultural programs, the tobacco program over the years has achieved the original basic goal of providing price and income protection for a large number of small family farms without incurring large government outlays. However, the tobacco program has been the focus of attack for many years. Proposals to eliminate or dramatically alter the program are brought up annually in the U.S. Congress. Earlier this year tobacco state lawmakers were successful in defeating a House of Representatives proposal to deny crop insurance and extension services to tobacco farmers by a margin of only two votes (212-210). The unprecedented 1996 Farm Bill did not address the tobacco program as tobacco is under permanent legislation. Although the tobacco program "operates" as a no-net-cost program, farm group leaders are skeptical whether the tobacco program can survive amidst the changing federal farm policy environment.

Abolishing the federal tobacco program would eliminate the value of the quota, representing a major income loss to quota owners. Price volatility would increase significantly and U.S. tobacco prices would fall by 20 percent to 25 percent or more without a production control/price support program. A price decline of this magnitude would likely reduce the number of family farms growing tobacco by more than 50 percent and would be devastating to many small rural communities that depend on tobacco income, but lack off-farm employment opportunities. Even with much lower and volatile prices, U.S. tobacco production without a tobacco program would likely increase in concentrated low-cost production areas, depending on the successful adoption of lower cost production technologies and the political/regulatory environment for tobacco. The elimination of the tobacco program would also have adverse effects on land values, property tax bases, and the sale of agribusiness goods and services in certain rural areas. Without a tobacco program, tobacco companies would have access to lower cost domestic and foreign leaf, resulting in slightly lower cigarette prices (and thus slightly higher cigarette sales) and/or higher tobacco company profits.

The design of the tobacco program (i.e., price supports and production control) has been well-supported by the quota owners, producers, and the tobacco companies over the years. If the federal program is eliminated, the question becomes: Can a production control/price support program be designed without governmental assistance (i.e., privately operated)? Program financing and maintaining effective production controls become critical and challenging issues surrounding a privatized program.

External Issues

In addition to international competition and program issues, perhaps the most serious threats currently facing Kentucky's tobacco industry are regulatory and legal. In August 1996, the Clinton Administration has granted the Food and Drug Administration (FDA) authority to regulate tobacco products to reduce youth smoking. The tobacco companies and farm organizations have stated that they oppose youth access to tobacco products, but are fearful of FDA attempting to gain broad jurisdiction over the sale of tobacco products to all consumers. In response to this threat, the tobacco industry is challenging FDA regulation in courts on the grounds that Congress never intended for the FDA to regulate tobacco. Tobacco farm policymakers and some tobacco companies are supporting legislative efforts to address the youth smoking issue.

The tobacco industry is also facing a large number of class action suits. The lawsuits accuse tobacco companies of concealing evidence that smoking is addictive and manipulating nicotine levels to "hook" smokers. In May, a federal appeals panel dismissed a potential multibillion dollar national class action suit against U.S. cigarette manufacturers. This issue now has been diverted to a series of state class action suits.

The outcome of these regulatory and legal issues facing the industry remains unclear. What is clear is that they could have a potentially devastating impact on the U.S. tobacco industry and the Kentucky agricultural economy. What also is clear is that given the financial resources at risk, most of these issues will likely be tied up in court for many years to come.

Diversification Efforts/Limitations

Given the uncertainty of the tobacco program and the overall tobacco economy, tobacco farmers and farm organizations are examining and experimenting with diversification strategies to supplement the potential decline in tobacco income. Tobacco farmers have been advised for decades that they need to diversify, and many farming operations have. Despite various degrees of diversification, however, many remain extremely dependent upon a crop with a very uncertain future.

Diversification in many parts of tobacco-growing regions is limited for a variety of reasons. The major reason cited by tobacco farmers is the profitability and the stability of returns for tobacco relative to other enterprises. While some fruit and vegetable crops under favorable growing and marketing conditions may rival or even exceed the net returns of tobacco in some years, there is no single crop (or livestock) enterprise available that will consistently generate the level of tobacco returns for a large number of small family farms.

Successful diversification efforts often also entail discovering and maintaining a niche market for some commodity. Additional competition by a few producers or sudden and unexpected changes in market windows may cause prices and profits in these markets to fall abruptly. Even if some farmers are willing to take on less profitable enterprises with more price risk, land characteristics (e.g. farm size, topography, soil quality), labor resource constraints, limited marketing outlets, large capital investments, and the degree of management often limit many tobacco farmers from expanding or adopting new enterprises. For many tobacco farm families, diversification or complete abandonment of tobacco production simply means part- or full-time employment off the farm.

Another potential reason cited for lack of diversification among tobacco farmers is age. The majority of tobacco farmers are over 50 years of age. They have heard the likely downfall of tobacco for decades, yet tobacco demand and use remains relatively high. Many of these tobacco farmers are reluctant to invest in riskier enterprises that may have the potential to generate long-term returns comparable to tobacco. Some have attempted alternative crops in the past with mixed to poor results. Given their age, plus limited labor, capital and managerial resources, these farmers will allocate their resources to the enterprises that generate the greatest short-term economic return. For many, this enterprise mix continues to be led by tobacco.

For some Kentucky farmers diversification strategies may include tobacco for use in alternative or extended uses. According to scientists, the tobacco plant is one of the easiest and most economical plants to manipulate genetically. Genetically engineered tobacco can be used in the production of various items including pharmaceuticals, vaccines, industrial enzymes, insecticides, and personal care products. Research and product development using bioengineered tobacco are still very much in their infancy. Presently it appears evident that a market will develop for genetically engineered tobacco. However, with no established market at this time, it is difficult to surmise the potential economic effects at the farm level. In the immediate future, it appears that this technology will lead to a niche market for a small subset of tobacco growers to supplement tobacco grown for traditional uses. The longer term prospects for tobacco farmers are still unclear.

Despite the limitations facing tobacco farmers, some diversification is occurring beyond traditional enterprises. Both the Kentucky Farm Bureau and the Burley Tobacco Grower's Cooperative have recently initiated programs that will likely enhance diversification opportunities for Kentucky tobacco farmers. In addition, the state's Department of Agriculture and the University of Kentucky's College of Agriculture are allocating more resources towards agricultural diversification. These supplemental enterprise efforts will likely reduce Kentucky's dependence on tobacco over an extended period.

What Lies Ahead for the Kentucky Tobacco Industry?

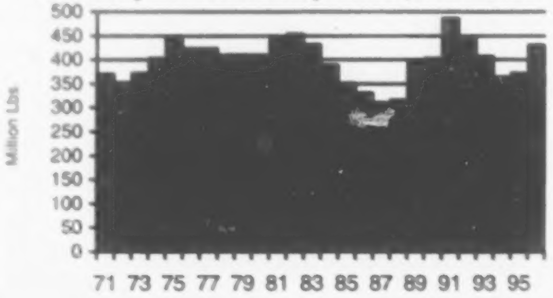
The tremendous amount of political, economic, legal, and social uncertainty surrounding the tobacco industry makes outlook projections for this controversial crop extremely difficult and risky. The current factors shaping the tobacco outlook lead to more questions than answers.

While the industry has experienced much volatility over the past couple of decades, the trend line for Kentucky burley quota since the early 1970s is basically flat at 400 million pounds. Dark tobacco acreage allotments, while down in 1996, have rebounded considerably from their lows in the 1980s. Thus, despite all the serious attacks on tobacco, Kentucky tobacco production has not drastically declined as many have predicted over the years. But can the Kentucky tobacco industry survive in the future?

Presently, tight world tobacco supplies and growing world demand are increasing the need for burley tobacco which may result in higher production quotas for Kentucky farmers in 1997. Despite escalated educational campaigns on tobacco use and health, tobacco consumption continues to grow modestly worldwide. This trend is not expected to reverse abruptly in the near future. Thus, demand for tobacco worldwide is expected to remain near current record levels leading into the 21st century. However, tobacco consumption in traditional markets for U.S. tobacco and tobacco products is stagnant or declining. Most of the growth in the world market is occurring in markets that presently cannot afford U.S. tobacco or U.S. tobacco products. Presently, U.S. demand is relatively strong in response to tight world supplies. However, world burley production is increasing, which will eventually put pressure on farm group leaders to once again address price competition. Even if the farm leadership decides in the future to lower price supports for U.S. tobacco, it remains questionable whether U.S. burley producers collectively would increase supply to meet the anticipated increase in demand. Thus, the ability of the U.S./Kentucky tobacco producer to take advantage of the growing world market is limited, given the current tobacco program and the cost structure of many existing growers.

FIGURE 16.4

Kentucky's Basic Burley Quota, 1971-1996



Domestically, additional taxation, regulation, and health issues will likely result in the industry reverting back to annual declines in U.S. cigarette consumption. Tobacco leaf imports under the new tobacco trade policy have the potential once again to become a serious threat to the domestic tobacco grower. Furthermore, protection for the small family tobacco farm is jeopardized by the potential dismantling of the tobacco program. Finally, the legal challenges currently facing the tobacco industry could eventually have very serious negative ramifications for the entire industry.

While it is difficult to estimate the potential economic effect of these issues facing the tobacco industry, we can expect that the factors mentioned above will induce a significant change in the structure of tobacco farming in Kentucky and surrounding states leading into the 21st century. Increasing cost pressures and alternative resource opportunities will likely continue to erode interest in growing burley tobacco in Tennessee and North Carolina. Consolidation is occurring slowly for Kentucky's tobacco industry, but it is occurring and will continue. The number of farm quotas has declined from over 150,000 in the early 1990s to around 130,000 in 1996. The pace of future consolidation hinges greatly on program changes and program survival. Obviously, the elimination of a price support/production control program will greatly accelerate tobacco farm consolidation. Farm labor/barn space limitations, increasing off-farm employment opportunities, declining profitability of tobacco, the antitobacco movement, and the long-term outlook for tobacco are collectively resulting in a declining interest in growing the crop in some areas of the state. The number of tobacco producers will likely fall at an accelerated rate, with a continuing emphasis on part-time farming and off-farm employment. Livestock and horticultural production will likely receive additional attention in these traditional tobacco growing areas. While proving beneficial to certain producers, it is unclear whether these supplemental/alternative agricultural enterprises (suitable for the existing tobacco farm resources) will be able to generate large enough economic returns to sustain the majority of small to midsize family farms in these rural areas. Thus, the high cost of production in tobacco-dependent regions that are not able to lure attractive off-farm employment opportunities will likely be challenged in the future to achieve much additional economic growth.

Alternatively, the tobacco economies in the more efficient tobacco-growing regions of the state may be able to compete quite effectively in a future environment of intense international competition and major changes (or possibly elimination) of the U.S. tobacco program. The niche market for high-quality U.S. burley may enable some Kentucky tobacco farmers to maintain current tobacco production or perhaps increase production under a program elimination scenario. Quality is still a major factor in determining manufacturer purchasing patterns. Premium cigarette sales have been increasing the past several years in the United States relative to generic cigarettes which should aid domestic growers. Furthermore, the anticipated increase in purchasing power in various parts of the world will likely continue to boost the demand for competitively priced/higher quality cigarettes. Although tobacco leaf quality has improved overseas, the growing and curing conditions in Kentucky still provide Kentucky farmers with a distinct quality advantage over their competitors in other parts of the world. The questions now become how large of a market and what is the quality price premium?

Thus, while the structure of tobacco farming in Kentucky will likely change significantly in the near future, a slowly declining domestic market coupled with overseas demand patterns suggest that the Kentucky tobacco industry will still be a viable economic sector in the years to come. This does not suggest that the Kentucky tobacco economy will once again approach the record $1 billion crop of 1982. But the niche demand for Kentucky's tobacco in the world market will likely enable the industry to achieve $500 to $900 million crops in the immediate future. (As detailed above, though, this income will be concentrated in fewer farming operations in the future which certainly presents challenges to policymakers and community leaders in areas lacking off-farm employment opportunities). However, even this potential outcome is immensely dependent on the uncertain future political, regulatory and legal actions affecting the U.S./Kentucky tobacco industries.

Negotiating the New Social Contract

The terms of today's employee-employer contract have become far less favorable for workers, creating income inequities, critical gaps in health and retirement provisions, and, some argue, structural unemployment. While the current drift of employer practices would appear to portend a bleak future for worker-employer relations, research suggests a far different approach is needed. Further, organized political responses to current trends appear to be well underway.

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The uncertainties that attend much of postmodern life are perhaps most pronounced in the workplace where the relationship between employers and employees is undergoing considerable change. Workers, enterprises, industries and whole economies are being rocked by the destabilizing effects of global competition, technological advancement, and the structural changes they have compelled. While a transformed marketplace has helped liberate millions of workers from autocratic management systems, the drive to remain competitive has also led to relentless cost-cutting. Labor, which comprises an estimated 70 percent of all production costs,[1] has been an easy, first-strike target. Millions of jobs have been outsourced, marginalized to part-time or contract status, or eliminated altogether; the buying power of wages has remained stagnant for two decades; and the benefits that once enabled health and retirement security have eroded. As a consequence, some observers have pronounced the social contract irretrievably broken. Clearly, a far more tenuous agreement, one that shifts many responsibilities previously assumed by employers to workers, is influencing employment practices nationally.

The weakening social contract, however, is only part of the dichotomous world of work. Economic anxiety now coexists with dramatic organizational change that is fostering more democratic, participatory work environments and collaborative partnerships between managers and workers. While exhilarating to many, the assumption of new responsibilities and roles that comes with such change is troubling to others, producing yet another reservoir of work-related anxiety. Research, however, shows that the shift to "high-performance" organizations enables higher returns by enriching and routinely tapping the knowledge of front-line workers. A 1995 literature review for the U.S. Department of Labor concluded, "The evidence for employee development practices as a significant driver of productivity and profitability appears firm."[2]

The process of adaptation to these often contradictory changes is expected to continue unabated for years to come. While the current drift of corporate employment practices would seem to portend a disappearing social contract between employers and employees, the ethical and economic validity of these strategies is being broadly challenged. At the same time, widespread public disapproval is giving rise to organized responses. Some optimistically predict that economic growth will neutralize simmering resentments, a scenario which the present health of the economy makes more plausible. Regardless of what unfolds, the ground rules for this uncertain playing field will likely be a subject of debate for years to come.

The dilemma at the center of the dialogue, suggests Carnevale, is how to preserve needed flexibility in our economy and labor market and, at the same time, provide people with a "tool kit"—skills, health care, pensions—to survive.[3] Throughout modern history, the U.S. government has helped fill gaps in support when individuals were unable to work, to find work or, more typically in recent years, to achieve self-sufficiency through work. But the demands on governments continue to rise. In response, suggests Kapstein, governments around the world are trying to "break their postwar deal with workers while maintaining their commitment to an open economy." Instead, he suggests, the focus should be on "negotiating a package that helps workers adjust to ongoing economic change."[4] The pressure for such a package, for structural responses to the growing gap between work and well-being, will almost certainly continue to mount.

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[1] Blinder, A. (Ed.). (1991). *Paying for productivity.* Washington, DC: Brookings Institution, p. 1.

[2] Mavrinac, S.C., Jones, N.R., Meyer, M.W. (1995). *The financial and non-financial returns to innovative workplace practices:A critical review.* Washington, DC: US Department of Labor, p. iii.

In the absence of sustained and rising economic growth, the terms of today's weakened social contract may result in massive unmet public need over the long term. Ultimately, we must determine when and how to engineer responses to unmet needs and how to pay for them. For the foreseeable future, this difficult reckoning will be the subject of a continuing dialogue that will not easily nor quickly yield solutions. Nevertheless, the issues at stake in the new social contract present the nation's most formidable challenge, one policymakers can ill afford to ignore.

An Expanding Pie, Smaller Pieces

Since 1970, the United States has been mired in what economist Thomas I. Palley calls a "Leaden Age" during which economic growth has been accompanied by the persistence of seemingly incompatible forces—falling wages and rising employment.[5] Even during the 1992-93 recovery, Mishel, Bernstein and Schmitt report, the median U.S. family income declined while unemployment fell and gross domestic product expanded.[6] Ordinarily, today's low unemployment rates would exert upward pressure on wages, but, until recently, that pressure has been isolated regionally and occupationally and has remained negligible overall. Only in the past 18 months has inflation-adjusted personal and business income begun to show sustained and significant rates of growth,[7] what some see as a sign that "public tolerance of wage stagnation is reaching its limits."[8]

In spite of today's good economic news, underlying anxiety about the future is not likely to dissipate soon. Today, whole classes of workers are benefiting only marginally or not at all from an economy that has created millions of jobs and propelled the stock market to record heights. And, in spite of formal reports of low unemployment, evidence of structural unemployment is mounting nationally and internationally. In spite of the buoyancy of the moment, Freeman suggests, the American economy bears a disturbing resemblance to that of a Third World nation "where the wealthy and powerful prosper while the less well-off struggle."[9]

Nevertheless, Americans are cautiously optimistic about the general trend of today's economy, a rather remarkable mood swing that occurred in just a few months. A February 1996 *Business Week*/Louis Harris and Associates poll found that only 50 percent of Americans saw better times ahead, compared to 59 percent of survey respondents in 1989.[10] By September, Americans were buoyed by sustained economic growth and wage gains. A *New York Times*/CBS News poll found that 72 percent of people believed the condition of the economy was good, but 40 percent expressed the belief that future generations would not be better off.[11]

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[3] Carnevale, A. (1996, July 15). The future of business, labor, and government relationships. Future Vision, Eighth General Assembly of the World Future Society, Washington, DC.

[4] Kapstein, E.B. (1996, May/June). Workers and the world economy. *Foreign Affairs*, 21.

[5] Palley, T.I. (1996, July). Recipe for a depression. *The Atlantic Monthly*, 45.

[6] Mishel, Bernstein & Schmitt. [On-line] Available: epinet.org/epswa-ex.html.

[7] McNamee, M. (1996, September 2). Something doesn't add up here. *Business Week*, 58.

[8] Reno, R. (1996, October 6). Wage dissatisfaction fuels new 'revolution.' *Lexington Herald-Leader*, p. D6.

[9] Freeman, R.B. (1996, September/October). Toward an apartheid economy? *Harvard Business Review*, 115.

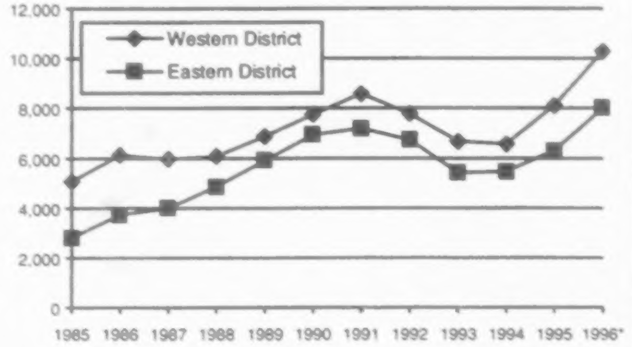
[10] *Business Week*/Louis Harris & Associates. (1996, March 11). America, land of the shaken. *Business Week*, 64-65.

[11] Mandel, M. (1996, September 23). Whatever happened to economic anxiety? *Business Week*, 36.

In spite of today's relative optimism, layoffs have continued unchecked, rising 24 percent in 1996 over a comparable period in 1995.[12] The manufacturing sector alone lost 140,000 jobs over the past year,[13] many of which will not be easily replaced. During the 1990s, the Economic Policy Institute reports, U.S. workers have experienced the worst rate of job losses since World War II, and, on average, workers lose 15 percent of their income on the next job, while a quarter of laid-off workers have no health insurance.[14] To no one's surprise, nearly half (46 percent) of employees of large corporations are "frequently concerned" about being laid off, up from 44 percent in 1994, and 31 percent in 1992.[15]

In spite of economic uncertainty, consumer confidence as measured by spending has lifted out of the doldrums to reach a six-year high.[16] But, for many, this release of pent-up consumerism may have less to do with purchasing power than it has to do with eroding benefits and frustration with inaccessibility to a consumer society. In response, more and more Americans live beyond their means by piling on credit card debt. In turn, personal bankruptcies have reached their highest quarterly point in history.[17] Bankruptcy court officials predict that as many as 1 million Americans may go broke this year.[18] In Kentucky, where a record pace of filing is underway, court officials and attorneys for the newly bankrupt attribute a growing portion of claims to medical bills the uninsured or underinsured cannot pay.[19]

FIGURE 17.1
Bankruptcy Filings, Eastern and Western Districts of U.S. District Court, Kentucky, 1985-1996



*Projections based on filings in the first six months of 1996.
Source: U.S. District Court for Eastern Kentucky and The Courier-Journal

Indeed, the benefits that stand between millions of Americans and bankruptcy are as uncertain as the jobs to which they were once routinely tied. The Employee Benefit Research Institute reports that an estimated 61 million non-elderly Americans had no health insurance during a given week in 1995.[20] Among those most likely to be without health insurance were the self-employed and employees from a range of industries that have historically sponsored benefits.

The future appears to offer even less certainty. In 1992, according to the Census Bureau, only an estimated 40 percent of the U.S. civilian labor force was covered by a pension plan,[21] signaling a looming deficit in retirement incomes. Employers have divested enterprises of many responsibilities for health care and pension provisions, trimming benefit packages, shifting more responsibility to workers, sometimes abandoning commitments to retirees altogether, and hiring more contract and part-time personnel who must fend for themselves. So far, government has declined to fill the void or to make pensions more portable. Indeed, the recent national political debate is one of which services to jettison in order to balance the budget, rather than how it can close widening gaps.

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[12] Mandel. Whatever happened to economic anxiety?, 34.

[13] Mandel. Whatever happened to economic anxiety?, 35.

[14] Mishel, L., Bernstein, J. and Schmitt, J. (1996). *The state of working America, 1996-1997.* Washington, DC: Economic Policy Institute. [On-line] Available: epinet.org/epswa-in.html#squeeze, 4.

[15] Mandel, M. (1996, September 16). Workers have a case of nerves. *Business Week*, 30.

[16] Cooper, J.C. and Madigan, K. (1996, August 12). This shopping spree isn't over yet. *Business Week*, 23.

[17] Greenwald, J. (1996, July 8). Deadbeat and upbeat. *Time*, 44.

[18] Yetter, D. (1996, September 9). Bankruptcy surge blamed on medical bills. *The Courier Journal*, p. A1-6.

[19] Yetter.

[20] Employee Benefit Research Institute. (1996, May 15). Health reform measures would benefit some, but not all, groups of workers, according to new EBRI report (news release). [On-line] Available: www.ebri.org/rp0515.htm.

[21] US Bureau of the Census. (1994). [On-line] Available: www.medacess.com/census/9420588.htm.

For many, the gap between today's wages and the quality of life work once afforded is widening. Nearly 20 percent of the year-round U.S. labor force earns too little money to escape poverty,[22] and, the Census Bureau reports, the rich continue to get richer while economic circumstances remain much the same for the poor and the middle class.[23] Between 1984 and 1994, average household income rose just 1 percent, but for those at the bottom of the earnings ladder, the poorest one-fifth of households, income rose at a glacial pace of *one-tenth of a percent a year*. Meanwhile, the top one-fifth of households realized a 20 percent gain in income.[24] Recent studies commissioned by the bipartisan federal Competitiveness Policy Council found that average hourly wages adjusted for inflation are now $120 lower than their peak in 1973.[25]

To add insult to injury for workers, the compensation packages of U.S. CEOs, many of whom ordered layoffs, jumped 92 percent between 1990 and 1995, while worker pay inched upward 16 percent.[26] In 1995, the pay of the average U.S. CEO was 141 times that of the ordinary factory worker,[27] a circumstance Reich refers to as "the tinder for mass resentment of business elites."[28] With the announcement of every major layoff, Reich observes, "a chill is sent through the living rooms and kitchens of millions of American homes . . . To the extent that we're concerned about social tranquillity, that sense of insecurity is a real cost."[29]

Beneath today's official U.S. jobless statistics, Thurow argues, lies a sea of unemployed and underemployed workers. National unemployment rates are based on the Current Population Survey, which examines a pool of survey subjects during rotating time periods. In April 1996, Thurow estimated the real U.S. unemployment rate at around 14 percent and concluded that as much as one-third of the workforce "is potentially looking for more work than they now have."[30] Among those in search of more work are discouraged workers, underemployed contingent and part-time workers, legal immigrants, and an estimated 5.8 million working-age men who are no longer reflected on formal employment or unemployment rolls.[31]

Thurow and others have advocated a new approach to managing the U.S. economy, one that rejects what they argue are baseless fears of inflation and permits higher rates of growth and a level of jobs creation that will eliminate the slack—and some of the underlying tensions—in today's labor market. That slack, they argue, is holding wages in check. Many economists adhere to a counter theory of a natural unemployment rate, estimated at around 6 percent. Below the natural rate, it is argued, inflation is triggered. But the stalled growth of wages in an era of low formal unemployment brings the theory into question. Galbraith argues, "The model is junk,"[32] and only "a macroeconomic commitment to full employment"[33] will achieve higher living standards. As Thurow observes, "In a world where there are always millions of unemployed and underemployed workers, firms do not have to pay efficiency wages. The same degree of cooperation, commitment, and effort can be achieved by using the motivation factor called 'fear'—the fear of being thrown into this enormous sea of unemployment and underemployment."[34]

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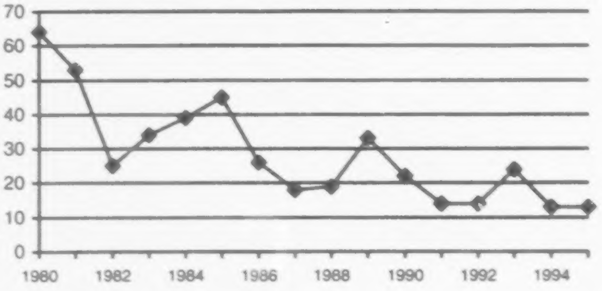
[22] Snyder, D.P. (1996, March-April). The revolution in the workplace: what's happening to our jobs? *The Futurist*, 8.
[23] Fernandez, S.L. (1996, June 20). Census report: rich get richer, poor stay that way. *Lexington Herald-Leader*, p. B-1.
[24] Kacapyr, E. (1996, October). Are you middle class? *American Demographics*, 31.
[25] Mishel, L. and Bernstein, J. (1996). Trouble in paradise: eroding wages and growing income inequality, in *Running in place: Recent trends in US living standards*. Washington, DC: Government Printing Office.
[26] Byrne, J.A. (1996, April 22). How high can CEO pay go? *Business Week*, 100-101.
[27] Byrne, 103.
[28] Byrne, 100.
[29] Byrne, 38.
[30] Thurow, L. (1996, March-April). The crusade that's killing prosperity. *The American Prospect*, 56.
[31] Thurow, 56.
[32] Galbraith, J.K. (1996, March-April). The surrender of economic policy. *The American Prospect*, 63.
[33] Galbraith, 64.
[34] Thurow, 57.

One manifestation of the fear to which Thurow refers is discernible in the sharp decline in worker protests. While good news for the smooth flow of commerce, a once traditional path of worker protest has been effectively silenced. According to the Federal Mediation and Conciliation Service (FMCS), the number of U.S. strikes in 1995 fell by 20 percent from the previous year, marking the lowest number of walkouts since World War II.[35] FMCS attributes the low rate of national strike activity to the decline of unions, the stability created by long-term union-management pacts, and the threat and use of striker replacements. As illustrated, the number of work stoppages in Kentucky has also trended downward since 1980. While the trend may signal a new harmony in unionized workplaces, it also reflects a diminished voice of protest in the face of what many union members view as economic coercion.

FIGURE 17.2
Work Stoppages in Kentucky, 1985-1995



Source: Kentucky Labor Cabinet

As a consequence of the trends in unemployment, income and critical benefits, work no longer lends a sense of certainty to the lives of millions of Americans and their families. Instead, it has become yet another source of anxiety. While workplace change promises liberation from the autocratic management systems of the past, many simply worry about having and keeping a job and the benefits that shield them from financial ruin. While prospects for the best-educated workers remain bright, a burgeoning class of workers is being relegated to monotonous, potentially injurious, low-wage jobs[36] that offer little opportunity for betterment, much less the promised nirvana of empowerment.

Grim Visions of Future Work

In the world of work, some envision an evolutionary process that will eventually dissolve the employer-employee bond as we know it. The doomsaying theorists who predict the end of formal, lasting links to employers suggest that workers, particularly highly educated "knowledge" workers, will become far more autonomous, attached to projects rather than employers, and responsible for negotiating their own long-term fates. Employers will reduce labor forces to only a core of highly educated and highly skilled professionals who will orchestrate a continuous flow of work performed by outside contractors. As Wysocki reports for the *Wall Street Journal*, "high-tech nomads" are already proliferating in our economy, partly because corporate downsizing has decimated the ranks of data-processing professionals.[37] While their services are much in demand, some are paying a high price in terms of lost free time, financial uncertainty and stress.[38]

If the emerging class of nomads represents the wave of the future, employees will assume full responsibility for skill development and for cultivating work opportunities and the income they produce, as well as the benefits they enable, including health care and retirement. And employers will become dependent upon the unpredictable availability of qualified workers in order to maintain stability and continuity in their businesses. What's more, the American family will undergo yet another shock, as nomadic workers are separated from family for long periods of time and experience recurring fluctuations of income, the sustained consequences of which, some researchers conclude, are contributing to income inequality.[39] Many more will also join the growing ranks of childless Americans due to the rising incompatibility of work with family formation and sustainability.

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[35] Greenhouse, S. (1996, January 1). Number of strikes at 50-year low in 1995. *The Courier Journal*, p. A1.

[36] Horwitz, T. (1994, December 1). 9 to nowhere: these six growth jobs are dull, dead-end, sometimes dangerous. *The Wall Street Journal*, p. A1.

[37] Wysocki, B. (1996, August 19). High-tech nomads write new program for future of work. *The Wall Street Journal*, p. A1.

[38] Wysocki.

A number of trends suggest we are moving inexorably toward such dramatic changes and a fundamental shift of responsibilities to employees. Lessons from our immediate past, however, suggest that, carried to the extreme, the dissolution of employer support and commitment to employees is unworkable, unsustainable and potentially destructive. Ultimately, the vision of free-floating workers who experience only temporary attachments to isolated projects is one of a society accepting and adapting to the wholesale abandonment of the patriarchal employer model. While many of the characteristics of this model are now widely and appropriately viewed as patronizing and demeaning, the role of responsible partnership is not. Indeed, research suggests that employer commitment to progressive human resource policies is not only good for employee relations but good for business. Employment security is central to that commitment.

> *Lessons from our immediate past, however, suggest that, carried to the extreme, the dissolution of employer support and commitment to employees is unworkable, unsustainable and potentially destructive.*

The Illusive Promise of Workplace Democracy

The diminishing certainty of work is also undermining confidence in workplace change that holds enormous potential for broad benefits. In spite of the presence of many sincere and mutually beneficial initiatives, employees remain wary. Trust, which is key to the success of workplace change initiatives and, Fukuyama argues, a nation's economic well-being,[40] has been severely undermined by the instability and insecurity of today's job market. As labor historian Nelson Litchenstein observes, "You cannot have an island of cooperation in a sea of antagonism."[41]

While the various iterations of organizational change have become ubiquitous in U.S. workplaces, Kochan and Osterman estimate that only about one-third of the nation's employers have formally adopted one or more human resource practices that enable mutual gain, which they argue is key to the advancement of high-performance work organization.[42] Instead, many employers are adopting the language of organizational change without making a real commitment to employees. Success, instead, hinges on human resource practices that cultivate, enrich and reward the irreplaceable contribution of employees.

Employer responses to competitive pressures are undermining the factors researchers cite as key to high-performance organization. Only in recent months have the substantial gains realized from rising productivity and the profits it has enabled begun to make their way into the wages of workers. But the trust on which high-performance organization hinges is being systematically undermined by growing employer indifference to job security. The effects could be far reaching. High-performance organizations are more likely to be engaged in the international marketplace, to use high-skill technology and to emphasize quality and service.[43] They are, therefore, far more likely to succeed in the global economy and survive over the long term.

The coexistence of a cruel economy and conciliatory workplace processes has provided abundant fodder for chroniclers of contemporary life. Cartoonist Scott Adams, for example, lampoons the hollow absurdities of faddish, essentially dishonest workplace initiatives. For "Dilbert" and colleagues, empowerment is, at best, a path to increased workloads, and, at worst, the freedom to look for another job, precisely the opposite of what principal architect W. Edwards Deming had in mind when he exhorted companies to drive fear out of the workplace. Workers may be laughing at the antics of Dilbert's hapless corporation, but the fear and cynicism that informs its humor are indicative of the damage done to the social contract and to a movement which promised to reinvent employer-employee relations.

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[39] Koretz, G. (1995, March 20). Why incomes grew less equal. *Business Week*, 24.

[40] Fukuyama, F. (1995). *Trust: The Social Virtues and the Creation of Prosperity*. New York, NY: Free Press, 7.

[41] Litchenstein, N. (1996, July 15). The future of business, labor, and government relationships. *Future Vision: Ideas, Insights and Strategies*. Eighth General Assembly of the World Future Society, Washington, DC.

[42] Kochan, T.A., and Osterman, P. (1994). *The Mutual Gains Enterprise*. Boston: Harvard Business School Press, p. 107.

[43] Kochan and Osterman, 94.

Because trust is central to an enterprise's ability to perform over the long term and in a dramatically changed context, the present state of employee-employer relations does not appear to be sustainable. America's preeminence in the world marketplace is no longer a foregone conclusion, but rather an ongoing challenge, one that will not easily be met by divided enterprises, nor by a demoralized, ill-prepared workforce. Consequently, diminishing employer support for workers and anemic employee loyalty appear to be systemic flaws that ultimately will compel a rethinking of the uniquely American social contract.

Assigning Blame

Not surprisingly, the current climate of economic insecurity has engendered considerable speculation about the causes of economic malaise, but few political solutions. That void, conclude Teixeira and Rogers, is fueling voter anger, particularly among noncollege-educated workers.[44] Further, Kapstein observes, "If the post-World War II social contract with workers of full employment and comprehensive social welfare is to be broken, political support for the burgeoning global economy could easily collapse." As the political debate sours, he adds, "Populists and demagogues of various stripes will find 'solutions' to contemporary economic problems in protectionism and xenophobia."[45]

Already, frustrated, angry workers, particularly those in coastal and border states, are leveling blame for job losses and wage erosion at imports and immigrants, rather than the faceless economic forces of technology, demographics, and increased government transfers to the elderly, to which some researchers pin blame for rising inequities.[46] Carnevale suggests immigrants will be the first target of the backlash when it arrives, one that could effectively seal the U.S. borders.[47] In response to this generalized anger, legislation aimed at severely restricting aid to *legal* immigrants recently passed in Congress. Global commerce and trade agreements have also inspired organized opposition from labor unions and fueled divisive campaign rhetoric, but the evidence suggests that sealing our borders would do little to change economic circumstances.[48]

> *"If the post-World War II social contract with workers of full employment and comprehensive social welfare is to be broken, political support for the burgeoning global economy could easily collapse."*

More recently, the media have also brought corporate practices, particularly downsizing and CEO compensation, into much sharper focus. The controversy has touched off a debate about corporate responsibilities and, more broadly, the purpose of the economy. Former Scott Paper™ CEO Al Dunlap has emerged as a chief defender of downsizing. "The people who are laid off are laid off because there aren't jobs for them. To keep those people on the payroll, in fact, jeopardizes the jobs of the rest of the workers,"[49] Dunlap argues. Avishai concurs that companies cannot guarantee lifetime employment to employees. Instead, today's heated discussion about corporate values and citizenship, he argues, is diverting attention and diluting critical "support for government action while unloading unsustainable expectations onto the private sector."[50]

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[44] Teixeira, R. and Rogers, J. (1996). *Volatile voters: declining living standards and non-college educated whites.* Washington, DC: Economic Policy Institute. [On-line] Available: epn.org/epi/epruye.html.

[45] Kapstein, 16-17.

[46] Burtless, G. (1996, Spring). Worsening income inequality: is world trade to blame? *The Brookings Review*, 27-31.

[47] Carnevale.

[48] Burtless.

[49] Dunlap, A. (1996, May). Does America still work? (forum). *Harper's Magazine*, 40.

An overwhelming majority of Americans (95 percent), however, express little sympathy with this view. Respondents to a February 1996 poll gave corporate America bad reviews on virtually every front, on wage fairness, employee training, job security, employee loyalty, creating good job opportunities, planning for the future, and caring about what's good for the country. Only the quality of American products garnered a favorable assessment.[51] What's more, 88 percent of those polled said the federal government should reward companies that create and preserve jobs and train workers while 67 percent endorsed penalties in the form of higher taxes for companies that eliminate jobs, close plants or provide their executives with extremely high compensation.[52]

Whether the much-publicized practices of prominent U.S. firms represent the product of logical and necessary streamlining that is, as Gilder suggests, "crucial to growth"[53] or the abandonment of larger responsibilities to society, the end product remains the same. An economic edginess pervades our lives. It is eroding trust between employers and employees, and causing many to seek someone or something to blame—a target for their anger. That, observes trade union economist Robert Blackwell, "makes for social divisions that are going to breed political movements that compromise the environment within which businesses exist."[54]

Backlash or New Beginning?

The economic inequities of today's marketplace are giving rise to organized political responses, many of which are well underway. While recent economic indicators suggest that the economic tide may finally be turning for workers, it could be too late to counter a long simmering backlash. What Reich terms the "coping mechanisms" many American families have adopted to stay afloat—increased female labor force participation, longer hours and multiple jobs—may have run their course.[55] Many see a point of explosion nearing on the horizon.[56] Carnevale predicts, "The action-forcing event will be the next recession or the next or the next one after that."[57]

Clearly, the logical champion for economic justice would ordinarily be labor unions, but their ranks have thinned to an estimated 11 percent of the labor force nationally, effectively neutralizing a key counterbalance to business and industry. Because trade unions have been an historic feature of democracy, Litchenstein suggests that the decline of unions in the United States is no less than "a high-stakes gamble."[58] Already, research attributes one-fifth of income inequality to the decline of labor unions.[59]

While pundits have administered last rites to unions more than once, the AFL-CIO is undergoing dramatic change and redirection. John Sweeney's election to the presidency of the AFL-CIO in 1995 marked the first turnover of national labor leadership in approximately 70 years,[60] a dramatic expression of rank and file demand for action and change. Sweeney and his lieutenants have promised to revitalize membership and recapture political advantage by dedicating one-third of the federation's annual budget to an aggressive organizing effort and by establishing a national training center for political campaign workers.[61] The hearts and minds of more working

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[50] Avishai, B. (1996, July-August). Social compact, version 2.0. *The American Prospect*, 29.

[51] *Business Week*/Louis Harris & Associates, 64-65.

[52] *Business Week*/Louis Harris & Associates, 64-65.

[53] Gilder, G. (1996, May). Does America still work? (forum). *Harper's Magazine*, 41.

[54] Blackwell, R. (1996, May). Does America still work? (forum). *Harper's Magazine*, 41.

[55] Reich, R. (1996, May). Does America still work? (forum). *Harper's Magazine*, 41.

[56] Litchenstein, N. (1996, July 15). The future of business, labor, and government relations. Future Vision, Eighth General Assembly of the World Future Society, Washington, DC.

[57] Carnevale.

[58] Litchenstein.

[59] Freeman.

[60] Litchenstein.

[61] Bernstein, A. (1995, October 30). A new deal at the AFL-CIO? *Business Week*, 119.

Americans are also being pursued by young activists, who worked on an AFL-CIO campaign in 20 cities in what could be the early roots of a new economic justice movement.[62]

Like unions, grassroots activists have grown impatient with the slow response of policymakers to economic conditions. Non-profit organizations are championing new approaches to development, as well as organized responses to economic inequities in communities throughout Kentucky and around the nation. Over the past two years, for example, organized community efforts have helped push the minimum wage issue onto legislative agendas in 33 states and marshaled ballot initiatives that could put the issue before voters in seven other states.[63]

Readily available information about what works in other highly successful economies is also likely to inform future negotiations of the social contract. The Japanese social contract, for example, is a binding lifetime agreement, one that was consciously crafted as part of a post-World War II plan for economic revival.[64] Lifetime employment and, later, informal employment cartels that discourage competition for workers, shaped a radically different and highly successful employer-employee relationship.[65] As a consequence of the conscious effort to craft a mutually beneficial and relatively harmonious system, employee loyalty is assured, even enforced, and absenteeism is virtually nonexistent. Free from competition for workers, companies invest far more in research and development and in their employees. Moreover, Japanese chief executives are compensated at only about 10 times the pay of the lowest level worker and, rather than eliminate jobs, the effects of economic distress are shared broadly.[66] While the carefully constructed Japanese system inhibits worker mobility, the relative disloyalty of American workers has served to constrain employer investments in critical training and education.[67]

Japanese chief executives are compensated at only about 10 times the pay of the lowest level worker and, rather than eliminate jobs, the effects of economic distress are shared broadly.

Though Japan's economy has been rocked by a protracted recession in recent years, the central tenet of lifetime employment appears to have survived this test of fire. Japan has emerged as the one nation to go against international trends toward structural unemployment.[68] Its modern post-World War II experiences offer an example of the conscious and successful construction of a more balanced and broadly beneficial social contract. In the coming years, U.S. policymakers are likely to be challenged to construct a system that is less adversarial, more cooperative, and mutually beneficial. Parks notes that the capital market effectively discourages employer investment in costly trust-building initiatives because investors are at a disadvantage in an economy that stresses short-term results.[69] If this misallocation of resources ultimately has a significant impact, Parks suggests, "a national policy to alter the institutional framework is often necessary."[70]

In the future, organized responses can be expected to exert significant leverage in the political sphere. Whether that leverage results in a more equitable social contract or mere scapegoating is yet to be seen. Policymakers, however, can expect the pressure for greater economic equity to continue rising so long as constructive responses are absent from the political landscape.

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[62] Hornblower, M. (1996, June). Labor's youth brigade. *Time*, 44-45.
[63] Swope, C. (1996, June). Fighting the wage war on local turf. *Governing*, 35-37.
[64] Fingleton, E. (1995, March 20). Jobs for life: why Japan won't give them up. *Fortune*, 119.
[65] Fingleton.
[66] Fingleton.
[67] Fingleton.
[68] Fingleton.
[69] Parks, S. (1995, May). Improving workplace performance: historical and theoretical contexts. *Monthly Labor Review*, 18.
[70] Parks, 23.

Conclusion

Ironically, at a time when our understanding of how central trust is to the economic and political life of our nation, it has been seriously undermined between critical partners. Macroeconomic circumstances and, some argue, corporate and government policies are driving a wedge between employers and employees, whose cooperation and mutual trust are central to our ability to compete and prosper. As a consequence, we may be destined to relive past mistakes, to experience yet another swing of the pendulum that will ignite conflict before a new order is established.

While the process of establishing a new order is likely to be a protracted one, the quality of the future before us continues to depend upon timely attention to circumstances that threaten adverse long-term outcomes. Instead, we are immersed in an era of public and private divestment of responsibility for economic well-being. As a result, an enormous gulf is emerging. Nevertheless, advanced societies, suggests Nobel Laureate Jerome Karle, must act. "The world . . . cannot possibly benefit from continued procrastination . . . or wait for the results of endless debate and deliberation. Too much debate and little testing is as bad for societies as it is for science."[71]

A number of indicators suggest that a protracted unwillingness to act, to experiment, to test strategies for solving the economic problems that breed social problems, could have disastrous long-term effects. Already, the gulf between rich and poor poses a threat to social stability and to the future health and productivity of the children who will sustain tomorrow's economy. Indeed, continued inattention to the economic well-being of workers at the bottom of the earnings ladder, whose economic circumstances have worsened over the past two decades, will likely perpetuate and even extend the reach of poverty. The children of the poor are far more likely to remain trapped in cycles of poverty that will cost each of us. In short, flaws in the social contract between employers and employees are not only undermining the economic and social circumstances of families and individuals today, they are jeopardizing future social and economic well-being.

Clearly, the changes underway in our society are profound, perhaps unimaginable in terms of their long-term consequences. Psychologist and management theorist William Berquist suggests that the organizations of our economy will not likely readjust and simply return to some previous form in a predictable pendulum fashion. Instead, he posits, "We are now entering into an era of fire, during which old organizational forms, structures, and processes will be consumed . . ."[72] But Berquist cautions that the reordering must be informed by the wisdom of the past. "We must return to premodern perspectives regarding the sacred nature of human organizations, and once again listen to enlightening stories regarding our own human history and destiny. Only in this way can we successfully tend the complex and irreversible fires of the postmodern world."[73]

As both Drucker and Berquist suggest, the future, post-fire state of today's tenuous social contract between employer and employee cannot be predicted with certainty. Instead, it will gradually be shaped by losses and gains, by experience and experimentation. Workers face the immense challenge of reclaiming a voice which has been lost in the din of our rush to adapt to structural economic change. The challenge to employers, who have seized the balance of power in today's economy, is to learn from the enlightening stories of our past as well as the best practices of today and to rediscover the power of mutual trust and commitment. For policymakers, the "stories" told by research and experience can help fashion a new social contract, one that affords greater economic security and advances social well-being. Jointly, workers, employers and policymakers can and must forge a new social infrastructure to help ensure that the "new society" is also a much better one.

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[71] Karle, J. (1996). The human and planetary condition. Preface to Didsbury, H.F. Jr. (Editor). *Future Vision: Ideas, Insights and Strategies*. Bethesda, MD: World Future Society, xiv-xv.

[72] Berquist, W. (1993). *The postmodern organization: mastering the art of irreversible change*. San Francisco: Jossey-Bass, 3-14.

[73] Berquist, 14.

Income Inequality in Kentucky

The distribution of income in Kentucky worsened during the decade of the 1980s. Over the course of the decade, the distribution of income shares for Kentuckians at the lowest income levels was less than the nation's at the same level while the income share for Kentuckians at the highest income level was greater than the top quintile for U.S. households. Possible explanations for the increase in the inequality of the distribution of income include demographic trends, which may exaggerate changes in income distribution; the decline in unionization; and technological progress, which rewards highly skilled labor and places abundant low-skill labor at a comparative disadvantage in the global economy.

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University of Kentucky

Discussions about the deterioration of U.S. income equality have become increasingly prevalent in the popular press, as well as among academics. However, such debates are a relatively new addition to the usual issues that dominate the polemics of economic policy and performance. A review of the literature of income inequality in the United States prior to 1980 presents a surprising consensus among leading economists on several issues. First, it was agreed that the distribution had essentially stayed the same over time. Henry Aaron viewed the stationary complexion of the distribution since WWII as being about as interesting as "watching grass grow."[1] Aaron's phrasing had two meanings: (1) growth in incomes had occurred at all levels in the United States, and (2) the study of income distribution was boring because it was not changing. Related to these conceptions was an optimism that the decade of the 1980s would see an improvement in the shape of the distribution, as a result of a more comprehensive income support system, an improved and equitable tax code, and a decline in labor market rigidities. A decade later, however, this enthusiasm underwent considerable revision as research by Lynn Karoly, Kevin Murphy, and others documented expanding wage inequality through the 1980s as a result of increasing returns to skill and changing demographic composition.[2]

This paper examines some of the changes in income and wage distribution in Kentucky for the period 1980-1990, using data from the U.S. Decennial Census of Population and Housing for 1980 and 1990, and the Current Population Survey (CPS). It attempts to document the extent to which the distribution of income inequality in the Commonwealth changed during the decade under review, and offers several theoretical explanations for factors that might be responsible for the observed changes. The paper concludes with a normative discussion of why policymakers should (or should not) care about the distribution of income inequality in the Commonwealth. In this chapter, three specific questions are addressed. First, did the distribution of income worsen dramatically for Kentucky during the decade of the 1980s, compared to the nation as a whole? Second, to what extent did Kentucky's performance follow the nation's? Finally, what possible explanations might account for changes in the income distribution?

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[*] I am grateful to Dr. Mark C. Berger and Dr. Dan A. Black for comments on an earlier draft of this paper, and Lucy Waterbury for exemplary research assistance. All remaining errors are my own. The data and programs used in this paper are available from the author upon request. All estimations were performed in *Intercooled Stata* v 4.0.

[1] Aaron, H. (1978). *Politics and the professors: the great society in perspective*. Washington, DC: Brookings Institution.

[2] See for example, Karoly, L. (1993). The trend in inequality among families, individuals and workers in the United States, in Danziger, S., Gottschalk, P. (Eds.). *Uneven tides: Rising inequality in America*. New York: NY: Russell Sage Foundation, and Murphy, K.M., Juhn, C., Pierce, B. Wage inequality and the rise in the returns to skill. *Journal of Political Economy, 101*, 410-42.

The possible answers to these questions have generated significant interest and speculation. While much is known about the deterioration of the income distribution at the level of the aggregate U.S. economy, little research exists at the state level. This article offers some answers by summarizing the results of a systematic analysis of the dynamics of income distribution in Kentucky. Before developing this analysis further, I will first explain some theoretical concepts that are used in discussions of income inequality and discuss several salient features of the two data sources that I have used in this study.

Theoretical Preliminaries

There are two principal concepts that are useful tools in discussions of income inequality. The first is the notion of percentiles. Imagine that all households in the Commonwealth could be ranked on the basis of their incomes. The top 1 percent of households would comprise the 99th percentile, and the top 2 percent of households would comprise the 98th and 99th percentiles of the household income distribution. Similarly, the statistical concept of quintiles is that of five, usually equal portions of a frequency distribution. It is important to note that a person's percentile or quintile ranking will depend on whether the unit of observation is a household or individual; it is conceivable for individuals with low earnings to be part of high-quintile households. Economists researching the distribution of income typically study households or individuals ranked in terms of quintiles instead of percentiles for efficiency reasons. Studying five groups of people is considerably more efficient than studying a hundred.

Another measure of income inequality is often illustrated in a "Lorenz Curve," an example of which is found in Figures 18.1a and 18.1b. If households, or workers, are ranked from lowest to highest on the basis of their incomes, then the Lorenz curve plots the cumulative percentage of households against the cumulative percentage of income received by these households. Under a perfectly egalitarian system, the Lorenz curve would be a straight line, with the bottom quintile receiving 20 percent of total income, the bottom 40 percent receiving 40 percent of income, and so forth. In the analysis that follows, the concepts of percentiles, quintiles and Lorenz curves will be used extensively.

Data

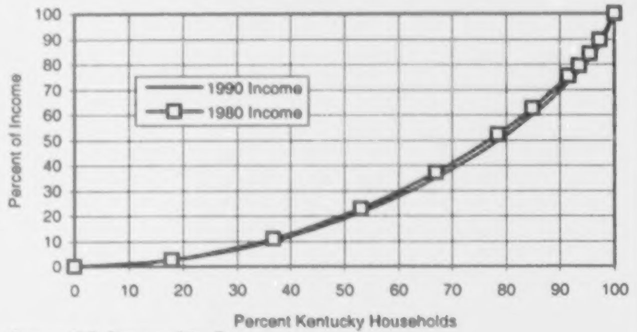
The data used in this analysis comes from two sources. First, the U.S. Decennial Census of Population and Housing from 1980 and 1990 is used to examine household level changes in the distribution of income. It is supplemented with individual level microdata from the Current Population Survey (CPS) to assess changes in the distribution of individual earnings. An important but subtle difference between income and earnings should be noted. Income refers to the sum of wages from all jobs, self-employment income, interest and dividend payments, pension and welfare payments. Earnings represent the sum of wages from all jobs, and net business income. Here, we study the distribution of "income" with the Census data, and the distribution of "earnings" with the CPS data. The CPS outgoing rotation data have no measures of the other components of income, a limitation which precludes their direct comparison to the Census data. However, given that earnings are the largest component of income, identifying changes in the distribution of earnings allows us to isolate factors that may, or may not, be driving the distribution of earnings. For example, if we were to find that the distribution of income worsened considerably (using Census data), and that there were no corresponding degeneration in the distribution of wages (using CPS data), we could comfortably conclude that changes in dividend income, rental income, or transfer payments must have caused the increase in income inequality.

The CPS, which is the official source of the U.S. government's unemployment statistics, is a monthly survey of almost 60,000 households in almost 700 different geographic areas.[3] Respondents to the CPS are included in the survey for four months, excluded for eight months, and then included again for four months. Questions pertaining to earnings and hours worked are asked of respondents in the "outgoing rotations," i.e., those workers at the end of their 4th and 16th months in the survey. The use of the CPS data allows for a year-to-year comparison of changes in the distribution of earnings, and is therefore a useful complement to studies pursued with Census data. In this analysis, current dollars have been converted to real dollars using the CPI-UX1 as the appropriate price deflator.

What Happened to Income Distribution in the 1980s?

FIGURE 18.1A

Kentucky Income Distribution, 1980, 1990



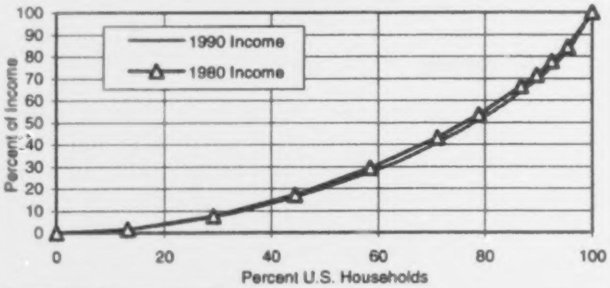
Source: U.S. Bureau of the Census

The Lorenz curves in Figures 18.1A and 18.1B were generated using Census data, and show changes in the income distribution of all households in Kentucky and the United States. In addition, Table 18.1A and Table 18.1B show the underlying income distribution for other demographic groups in Kentucky and the United States, including black and white households, as well as rural and urban households. While the income distribution did deteriorate during the 1980s, the regression was not as severe as previously thought. A common pattern emerges from the data. The dispersion in the distribution appears to be more pronounced between the 50th and 80th percentiles than anywhere else. Further, the distribution remained almost unchanged for households below the 20th percentile.

Table 18.1A reports summary income shares received by various quintile levels for the groups under study in Kentucky. Table 18.1B reproduces the same statistics for the United States. These tables were constructed by examining the previously discussed Lorenz curves at the appropriate quintiles. A comparison of the two allows a quick assessment of the changing fortunes of those at both ends of the income spectrum. From Tables 18.1A and 18.1B, we see that Kentucky's performance is worse that the nation's for the bottom quintile, as the share of income going to this quintile is less that the U.S. average for all the groups being studied. This situation remained unchanged from 1980 to 1990.

FIGURE 18.1B

U.S. Income Distribution, 1980, 1990



Source: U.S. Bureau of the Census

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[3] For a detailed description of the CPS and related terminology, see the US Department of Labor. (1992). *Bureau of Labor Statistics (BLS) handbook of methods*, Bulletin 2414, GPO Stock No. 029-001-031-03130-1.

TABLE 18.1A
Percent Income Received by Kentucky Quintiles

Kentucky Households	Bottom Quintile	Second Quintile	Third Quintile	Fourth Quintile	Top Quintile
All					
1980	3	10	16	26	45
1990	3	9	15	25	48
Black					
1980	2	9	14	28	47
1990	3	7	17	24	49
White					
1980	3	10	17	25	45
1990	3	9	16	24	48
Rural					
1980	3	10	16	27	44
1990	3	9	15	26	47
Urban					
1980	3	10	17	25	45
1990	3	9	16	24	48

Source: U.S. Bureau of the Census

TABLE 18.1B
Percent Income Received by U.S. Quintiles

US Households	Bottom Quintile	Second Quintile	Third Quintile	Fourth Quintile	Top Quintile
All					
1980	4	10	17	24	45
1990	4	9	16	24	47
Black					
1980	4	8	16	25	47
1990	3	8	16	25	48
White					
1980	5	10	17	24	44
1990	5	9	16	24	46
Rural					
1980	5	10	17	25	43
1990	5	9	16	24	45
Urban					
1980	4	10	17	24	45
1990	4	9	15	25	47

Source: U.S. Bureau of the Census

The second quintile in Kentucky mirrors the U.S. experience exactly, with the exception of black households where Kentucky fared better than the nation in 1980 and worse in 1990. The data do support the hypothesis that the past decade has witnessed the rich (those in the top quintile) receiving an increased share of income, while the second, third and fourth quintiles received a declining share of income. The fortunes of the bottom quintile remained unchanged through the 1980s. These results apply to all the household groups under consideration. There is also evidence that the increase in the share of income received by the top quintile over the decade in Kentucky is greater than the same increase for the nation's top quintile. While the top quintile in Kentucky increased its share of income by 3 percent on average, the top quintile for U.S. households realized a 2 percent gain. Once again, this pattern is constant across demographic groups in the state.

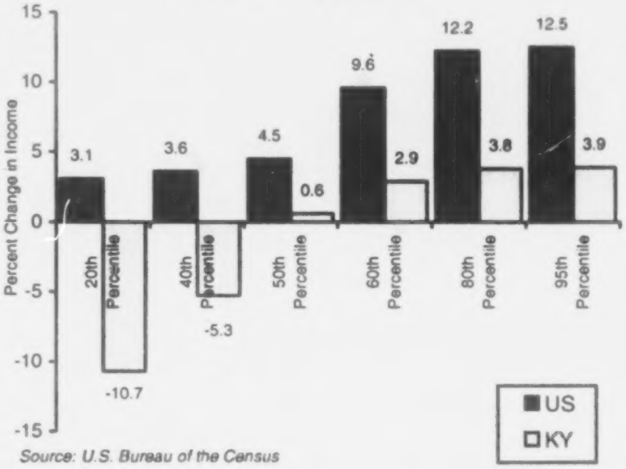
To provide the reader with a better sense of what income levels are required to be placed into the different quintiles, Table 18.2 shows the approximate income received by U.S. and Kentucky households at each of the quintiles. To be included into the fourth quintile (between the 60th and 80th percentiles) in Kentucky, for example, households would have had to receive an annual income of $16,500 in 1979 and an income of $29,000 in 1989. For the United States, it might be useful to note that while it requires a 1990 income of $97,000 to be placed on the 95th percentile, an income of $300,000 puts a household at the 97th percentile. To make it to the 99th percentile, households would have had to receive a little over $800,000.

TABLE 18.2
1980 and 1990 Incomes at Various U.S. and KY Household Percentiles

Percentile	U.S.		Kentucky	
	1980	1990	1980	1990
20th	$ 7,100	$12,000	$ 5,900	$ 9,000
40th	$13,000	$23,000	$11,000	$17,800
50th	$16,800	$30,000	$13,965	$24,000
60th	$19,599	$36,500	$16,500	$29,000
80th	$30,000	$57,500	$25,500	$45,200
95th	$50,000	$97,000	$44,500	$79,000

Source: U.S. Bureau of the Census

FIGURE 18.2
Percent Growth of Household Income at Selected Percentiles



Source: U.S. Bureau of the Census

Figure 18.2 compares decade growth rates in household incomes for households at the 20th, 40th, 50th, 60th, 80th, and 95th percentiles for the United States and Kentucky. In this presentation, the differences between the United States and Kentucky are striking. While all the U.S. households studied witnessed growth in income, households on the 20th and 40th percentiles in Kentucky became significantly poorer. A household in the 20th percentile in Kentucky, for example, witnessed a 10.7 percent fall in real income. Furthermore, income growth in Kentucky lags behind that of the nation as a whole at every percentile. That is, the Commonwealth became relatively poorer than the United States in real terms over the 1980s. It is important to recognize the uneven growth that took place in real incomes across different percentiles. Those households placed on higher percentiles received significantly greater gains to their incomes than did households below the 50th percentile. Post-World War II income growth in the United States has traditionally been distinguished by a pattern that resembles a staircase.[4] The rich in Kentucky became richer, while the poor literally became poorer. For the United States however, both the rich and poor became richer, while the rich became relatively richer.

When combined with the results of Figure 18.2 and Table 18.1, the above discussion might appear paradoxical. If the bottom two quintiles in the United States and Kentucky both lost income shares, how does one explain the 3.1 percent increase in real income accruing to a household on the 20th percentile for the United States? The answer lies in the fact that over the decade of the 1980s, the U.S. economy's gross domestic product grew almost 29 percent. While the size of the pie increased, the portions received by different groups (quintile shares) changed. For example, all households in the United States below the 40th percentile received 15 percent of the pie in 1980, but in 1990 they received only 13 percent. However, the increased size of the slice (for U.S. households) offset the loss in economic welfare from receiving a smaller share. Poor Kentuckians however, found themselves receiving a smaller share of the pie, as well as a smaller slice; they were worse off in 1990 than they were in 1980. This disturbing finding represents an aberration in the otherwise healthy performance of the Kentucky economy. Further discussion and analysis of this finding will follow.

Table 18.3 shows ratios of mean incomes for black- compared to white-headed households, and rural compared to urban households. The disparity between black and white incomes increased over the 1980's. In 1980, on average, black households received 66 percent of what white households received in the United States. In 1990, they received 64 percent of the average white household income. In Kentucky, the in-

TABLE 18.3
Relative Changes in Household Incomes

	US		KY	
	1980	1990	1980	1990
Black/White Incomes Ratio	.66	.64	.71	.68
Rural/Urban Incomes Ratio	.90	.86	.85	.83

Source: U.S. Bureau of the Census

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[4] Paul Krugman (1994) notes this finding for U.S. data in *Peddling prosperity: Economic sense and nonsense in the age of diminishing expectations.* New York, NY: W.W. Norton.

come differential was even more pronounced. It was 71 percent in 1980 and fell by 3 percent to 68 percent in 1990. Despite this adverse change, Kentucky still has a higher black/white income ratio than the United States as a whole.

Changes in the rural/urban income differential tell a similar story: the disparity increased in the previous decade for both Kentucky and the United States, with the Commonwealth's rural households receiving 3 percent less that the nation's. In 1990, rural households in Kentucky received 83 percent of what urban households received; in 1980 the corresponding figure was 85 percent. It is noteworthy, however, that while the rural/urban income ratio in Kentucky was more unequal than the nation's in both 1980 and 1990, Kentucky's inequality increased by 2 percent, while the nation's increased by 4 percent.

Interpreting the Evidence

In the light of the preceding analysis, which establishes the increased inequality in the distribution of income, it is necessary to mention several caveats which will be useful in interpreting the evidence and arriving at a conclusion. It is important to recognize that, for *most* household groups in Kentucky, real incomes rose regardless of declines in income shares. As Figure 18.3 illustrates, Kentucky households above the median were better off in 1990 relative to 1980, despite the fact that both the 3rd and 4th quintiles lost income shares. The quality of life for a household at the 70th percentile in 1990 might be equivalent to that enjoyed by a household at the 75th percentile in 1980. For example, the median income for married couples in 1989 was $45,266 in 1989 dollars, and $24,800 in 1979 dollars. In 1979, they would have been placed at the 74th percentile, and in 1989 at the 69th percentile. However, $24,800 in 1979 converts into $42,358 in 1989 dollars. In real terms, therefore, the welfare of this family has increased by 7 percent over the decade, while their position on the distribution has worsened. This point is particularly relevant to households which might have lost income share, but still realized gains in income (for example, a household in Kentucky above the 50th percentile).

While it is correct to interpret the increasing share of income received by the top quintile as evidence of the fact that the top quintile got richer, it is not correct to assume that the composition of the top quintile remained unchanged over the 1980s. Income mobility in the United States is the highest in the world, and large increases in the incomes of the rich accompanied by small decreases in the incomes of the less privileged may not be intolerable, if we all spend time at both ends of the income distribution. In fact, research by Isabill Sawhill of the Urban Institute finds that families who were in the top quintile in 1976 witnessed an 11 percent reduction in their real incomes by 1986. Despite Sawhill's research, it is difficult to believe that households in the top two quintiles in 1980 would find themselves in the bottom two 1990 quintiles.

Trends toward smaller households may exaggerate changes in the income distribution. Increasing family breakups or increases in the number of people living alone will contribute to the illusion of income inequality. A household made up of two wage earners each earning $30,000 a year is treated as an upper middle class household earning $60,000. If that household breaks up, it is replaced with two households, each receiving $30,000 a year. In Kentucky, while population grew 0.7 percent between 1980 and 1990, the number of households grew by 9.5 percent. The effects of smaller households on the income shares of lower quintiles is not known. However, increasing divorce rates through the 1980s, as well as increases in the number of single-parent households and single-person households, have all contributed to a smaller average household size.

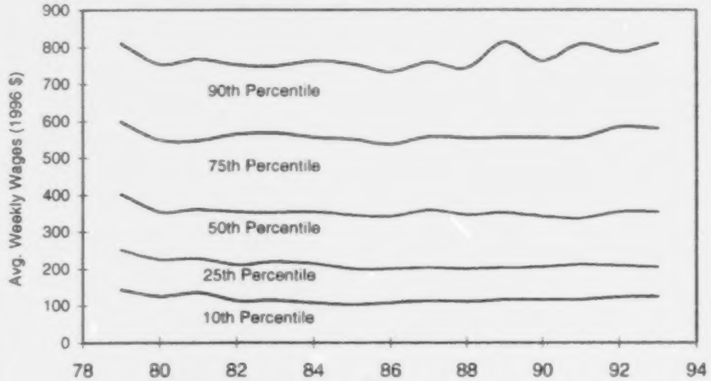
Together, these caveats suggest that the popular case for increased income inequality being detrimental to the economy is overstated. Such analyses, which are typical in the sociology or political science literature, typically ignore the idea that it is ultimately household or individual welfare that ought to be the focus of analysis. Merely reporting a degeneration in the distribution of income ignores a richer investigation that emphasizes changes in welfare and the dynamic nature of the U.S. economy.

The preceding analysis has discussed changes in the distribution of U.S. income. In the following section, evidence from the CPS on wage inequality in Kentucky is presented. The advantage of this inquiry is that we will be able to study changes in the distribution of earnings on an annual basis, an improvement over the two snapshots in time that Census data yield.

Wage Inequality in Kentucky

Figure 18.4 illustrates trends in the distribution of wage and salary earnings from 1993-1994. The horizontal axis is a simple time trend. The vertical axis measures average weekly earnings (in 1996 dollars) for workers at 10th, 25th, 50th (median), 75th and 90th percentiles of the wage and salary distribution. It is important to note that while the discussion on income inequality used households as a unit of analysis, the CPS data uses individual workers as the unit of observation. One advantage of this approach is that it is not confounded by changes in the size and structure of households. Regardless of such changes, Figure 18.4 reports the wage and salary earnings of individual workers.

FIGURE 18.3
KY Distribution of Wages, by Percentile, 1979-1993



Source: U.S. Bureau of the Census

The results of Figure 18.3 illustrate both cross-sectional and time-series changes in the distribution of wages. The cross-sectional, or point-in-time, differences in wages are evident from studying differences in the levels of weekly wages for a given year. In each year, we notice the skewed nature of the wage distribution; the differences in weekly wages for the lower percentiles (10th, 25th and 50th) are less severe than the differences for the upper percentiles. Also evident from the graph is the static nature of wage growth for the lower percentiles, with higher but still moderate growth in the upper portion of the wage distribution. This analysis allows us to conclude that while changes in the wage distribution may be partially responsible for changes in the distribution of income over the same period, that relationship is tenuous. Other sources of income such as property income or returns from capital investments are also responsible for the deterioration in the distribution of income. Unfortunately, the nature of the CPS and Census data sets precludes a more detailed investigation of these hypotheses.

Some Possible Explanations

Some of the losses to the lower income classes might be explained in terms of broader issues facing the U.S. economy. They permit us to compare changes in the complexion of the U.S. and Kentucky labor force and population over the 1980s.

Kentucky's 20 percent decline in unionization rates could contribute significantly to part of the deterioration in the distribution of income. Unions typically compress the wage distribution as a result of their bargaining methods, and the decline in their membership in the 1980s, in part because of the downturn in mining, could have been particularly devastating to traditionally unionized blue-collar workers at the lower end of the distribution.

A more plausible explanation is the steady increase in economy-wide returns to skill during the 1980s, as a result of technological progress. Such innovations reward those workers who use computers by enhancing their productivity. Typically, such labor has consisted of college-educated and other highly trained workers. Furthermore, increased U.S. participation in the global economy will reward highly educated labor and discriminate against unskilled labor which is more abundant in the global economy. Studies of international trade have shown that the United States has a comparative disadvantage with regard to low-skill, labor-intensive production. While these studies are useful in explaining the declining income shares at the lower end of the distribution and increasing returns to the top quintile, they are not helpful in explaining the constancy of income share received by the lowest quintile. Further research involving disaggregation by age and education is merited if these questions are to be more fully addressed.

What is interesting about changes in the distribution of income for the decade of the 1980s is that contrary to the relative equality surrounding income growth in the post-World War II era, the past decade saw incomes rising much faster at the top end of the distribution than at other parts. Furthermore, households in the top quintiles saw their share of income rise 2 percent to 3 percent, while those in the second, third and fourth witnessed a 1 percent fall in their income share. The causes of increases in social problems over the decade among those with the lowest incomes cannot be attributed to a falling income share for the lowest income quintile. In fact, the income share for this group remained constant at 3 percent during the 1980s. In the presence of real growth in incomes, mediocre changes in the distribution of income appear to be secondary. In fact, since much of the change in the distribution of income may be explained as a result of increasing returns to skill, as well as changing demographic composition, to enjoin a policy response would be premature given the limited understanding that we have of this problem.

However, the fall in real incomes that poor Kentucky households received, as well as the sluggish 0.6 percent increase in real income at the median, call for immediate attention. Having over 40 percent of the population significantly worse off in 1990 than in 1980 represents a singular exception to the nation's growth record for the 1980s, and policymakers would do well to focus attention on the Commonwealth's record in improving the economic welfare of its citizens. In the meantime, significant improvements in economic well-being will be realized only by those at the upper end of the income distribution, those for whom the grass grew during the 1980s.

Trends and Future Values in Technology

This article identifies five technology product areas, or areas for applied scientific research, which have the most potential for innovation and expansion within Kentucky over the next 5 to 15 years. These areas are: telecommunications, life science technology, biotechnology, material design, and environmental remediation.

By Dick Dedic
University of Kentucky

From a global perspective the single most critical factor in the process of evaluating and forecasting the future of science and technology is compression of the time for discovery, creation, and commercialization of innovative technologies. Time has always been a critical element in the evolution of technology and the way new ideas are fashioned into applied science. But today, and into the future, critical successes will hinge not only on the timing of an event but also on the length of the time frame within which that event occurs. Not only will an idea have to occur at the time when it is most useful, it will occupy an increasingly shorter period of ascendancy before being supplanted by newer and more advanced ideas. Consequently, forecasting a future 5 to 15 years from now is like aiming at a moving target that changes direction and speed at will. At best, the forecaster will be right for only a small fraction of time.

Nevertheless, the microprocessor is almost certain to be increasingly important, and the rate of scientific and technical discovery is likely to accelerate. Three new broad areas of development will, in turn, affect every part of the evolution of science and technology. Firstly, the size of every working device will shrink. As machines continue to shrink at increasing rates, we will be able to move more information, more quickly, across wider distances. Secondly, this nano-technology will spawn a biogenetic revolution that will significantly affect the way in which humans exist by more fully integrating living organisms with non-living support devices. Thirdly, we will develop a highly sophisticated "artificial intelligence" that can be used in combination with human intelligence to escalate the development of the previous two processes. I point these concepts out not as an attempt to scare anyone with visions of a robotic future nor to put a "wet blanket" on the potential for excellence, but rather to alert all of us to the potential of this magnificent adventure in self discovery. To succeed we must constantly evaluate where we are in the process and anticipate high achievement rather than simply react to a realization that science and technology have changed.

In addition to global prospects, the process of technological innovation hinges on the presence of pioneers—firms and individuals—and a supportive local infrastructure. It is a two-way street. While innovative technology tends to issue from individual creators or champions within small economic units, the overall infrastructure established by government encourages or discourages innovation. But nothing is certain. All too often, pioneering companies find a comfortable niche and lose their pioneering spirit. What's more, the risk pioneers take does not always pay off, as the work of seeking out and developing new technologies is costly and often subject to regulatory requirements designed to ensure product safety and efficacy. Moreover, products can be appropriated in the marketplace by firms that have invested little time and effort. As a consequence, individuals and firms can only do so much. Likewise, infrastructure can only do so much to facilitate success. Ultimately, we are able to achieve successful pockets of advanced technology when the individual or the enterprise risks becoming a technology pioneer and encounters a supportive infrastructure. Unfortunately, there is no precise formula that will ensure the successful advancement of technology. Therefore, any prediction will remain hostage to the interaction of the individual and the facilitating infrastructure.

In spite of the difficulty of creating the "right" infrastructure, I propose a series of specific technologies that are, at the very least, worthy of review and promotion at the state or regional level. I have concentrated on technologies for which global markets appear likely and a supporting infrastructure already exists in Kentucky. It is my belief, however, that all institutions of higher education or individuals with a pioneering spirit should make earnest attempts to participate in the research, development, and implementation levels of these technology areas. Further, the Commonwealth would do well to concentrate infrastructure-building efforts in these areas. Ultimately, scientific research within Kentucky's institutions of higher learning should become more attuned to the areas and to the potential for commercial application that they hold, an area that needs more emphasis if Kentucky is to become competitive in new technologies.

Increasingly, the federal government's approach to the discovery process is becoming limited to providing a framework, while leaving discovery and development to industrial and academic sectors at the state and local levels. The largest applied research funding source within the federal government, the Department of Defense, has been reducing its research and development budget and retargeting its dwindling resources to support dual use technologies, those with civilian as well as military applications. Given this situation, more of the research burden will continue to be shifted to the business and academic communities of states. Universities will be hard pressed to provide both basic and applied research capabilities without more active involvement from the business community and state government.

In January 1996, the National Science Board released a study of Science and Engineering Indicators, which examines all aspects of the research and development process from academic and industrial perspectives.[1] The United States, it concludes, is a world leader in science and technology, but that leadership has narrowed in relation to countries that have major commitments and capabilities and have increased their resources over the past two decades.[2] This dimension of global competition is significant for Kentucky because it opens new markets and new development opportunities for technologies derived from the rural, agricultural and extractive industries that have been the mainstays of the Kentucky economy for many years. Kentucky not only shares geographic and industrial similarities with many technology-developing countries, but infrastructure similarities as well. Many of the new technological competitors on the global scene have few major industrial centers and a limited breadth of technological expertise. Most global competitors will be emerging from traditional industrial technologies to compete in *limited* advanced technology markets that can be supported by existing infrastructure and economic resources. The implication is, of course, that Kentucky should identify a set of technological priorities based on its existing capabilities, its historical experience and expertise, its realistic economic and academic resources, and its desire to become a technological pioneer.

Future Technologies

I have selected five areas for technology products or applied scientific research which I believe will be important to Kentucky during the next 5 to 15 years. The technologies I have selected are all included in the U.S. Bureau of Census classification system, 10 Advanced Technology Product Areas. Technologies included on this list have historically led to leading-edge or pioneering products. These product areas are derived from the National Critical Technologies list of seven areas considered to be critical to develop and further long-term national security or economic prosperity.[3] This list of seven critical technologies is closely monitored both in terms of imports and exports and in terms of academic research and development. The seven technology areas pertain mostly to scientific research, hence are useful for international benchmarking of intellectual activity.

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[1] National Science Board. (1995). *Science & engineering indicators–1996.* (NSB 96-21). Washington, DC: U.S. Government Printing Office.

[2] National Science Board, p xvii.

[3] National Critical Technologies Review Group. (1995, March). *National critical technologies report.* Washington, DC: Government Printing Office.

The 10 Advanced Technology Product Areas are application-based derivatives of the critical technologies list. As such, they are oriented toward the commerce of innovation. Patenting activity has long been used as a marker of the direction of innovative development and scientific thinking. Each of the advanced technology product areas has experienced and continues to experience high levels of patent activity both in the United States and abroad, further confirming the categorization of these technologies as important to the global economy and the process of innovation. It is also important to recognize that these technology areas each represent very broad applied capabilities and innovative possibilities. The 10 advanced technology product areas are:[4]

- *Biotechnology.* The medical and industrial application of advanced genetic research to the creation of new drugs, hormones, and other therapeutic items for both agricultural and human uses.
- *Life Science Technologies.* Application of scientific advances (other than biological) to medical science. For example, medical technology advances such as nuclear resonance imaging, echo cardiography and novel chemistry, coupled with new production techniques for the manufacture of drugs, have led to new products that allow for control or eradication of disease.
- *Opto-electronics.* Development of electronic products and components that involve emission or detection of light, including optical scanners, optical disc players, solar cells, photosensitive semiconductors, and laser printers.
- *Computers and telecommunications.* Development of products that process increasing volumes of information in shorter periods of time, including facsimile machines, telephonic switching apparatus, radar apparatus, communications satellites, central processing units, computers, and peripheral units such as disk drives, control units, modems and computer software.
- *Electronics.* Development of electronic components (except for opto-electronic components), including integrated circuits, multi-layer printed circuit boards, and surface-mounted components, such as capacitors and resistors, that result in improved performance and capacity and, in many cases, reduced size.
- *Computer-integrated manufacturing.* Development of products for industrial automation, including robots, numerically controlled machine tools, and automated guided vehicles that allow for greater flexibility in the manufacturing process and reduce human intervention.
- *Materials Design.* Development of materials, including semiconductor materials, optical fiber cable and video discs, that enhance application of other advanced technologies.
- *Aerospace.* Development of technologies, such as most new military and civil helicopters, airplanes and spacecraft (with the exception of communication satellites), turbojet aircraft engines, flight simulators, and automatic pilots.
- *Weapons.* Development of technologies with military applications, including guided missiles, bombs, torpedoes, mines, missile and rocket launchers and some firearms.
- *Nuclear Technology.* Development of nuclear power production apparatus, including nuclear reactors and parts, isotopic separation equipment, and fuel cartridges (nuclear medical apparatus is included in life science rather than this category).

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[4] National Science Board, 6.

Selecting those technology areas and sub-areas with particular relevance to Kentucky is a risky proposition based on personal opinion, knowledge and, in some cases, almost entirely on gut-feeling. In addition to popular readings and the Census Bureau's analyses of trends in technological development, I have relied highly on the theory that a single event can have a significant impact on the innovation process. This, in effect, creates a filter by which technologies may be singled out without the interference of other market factors. The filter which I have used to select the emphasized technologies is based on my perception of the existing or developmentally possible science, technology and industrial resources of Kentucky and on the academic excellence or potential excellence of Kentucky educational resources. As I have indicated, it is probably not possible for a totally accurate picture of future technology to be developed at least on a narrow geographic level. An exhaustive study would require too much time, money and too many assumptions. In addition, it would be out-of-date before it could be completed. My suggestions of specific technologies are therefore merely suggestions of *potential*.

One major area of concern is public perception of the role of scientific discoveries and the new technologies within the economic and educational framework of Kentucky. Approximately 40 percent of Americans surveyed express a high level of interest in science discoveries and the use of new technologies. Individuals with more years of formal schooling and more courses in science and mathematics express significantly higher interest, demonstrating the persistent effect of science and mathematics education throughout the adult years.[5] Kentucky's relatively low position in terms of literacy and other educational measures is disturbing to any prediction of technological advancement. A citizenry that is uninterested in science and technology because it has an inadequate education is unlikely to support an infrastructure to develop technology. Further, such citizens are unlikely to become employees of technology-based businesses, given their lack of educational achievement.

Unless rapid change is effected, this problem of today will translate into failure in the future. Significant steps are being taken to increase the technology and scientific sophistication of children in Kentucky's school systems today, in the hope of producing a workforce and a population that will benefit from tomorrow's technology. The struggle will be within the legislating bodies of Kentucky, which will be challenged to act on faith that the selective development of infrastructure improvements and processes for seeding technologies with growth potential in Kentucky will help cultivate islands of opportunity and growth that will ultimately result in the economic betterment of the Commonwealth.

Infrastructure and potential are only two of the three significant factors in successful technological innovation. The makeup of individuals and companies in the state, the ability to attract individuals and companies, and the ability to instill in this group the desire to be a part of the advance of technology is the third, and many would argue, most important factor. Having led our technology horses to the water, we now have the task of making that water (future technologies) so attractive that they cannot resist the temptation to drink. All of the technologies I am about to suggest are doable, within the constraints of funds, education and other resources available to Kentucky, but the will to excel is the difference between success and failure in any of these areas.

The five technology areas which I believe have the most potential for innovation and expansion in Kentucky are:

Telecommunications. Specifically, we should focus on the technologies of networking and infrastructure development. Information interchange is taking on increasingly diverse forms. Kentucky is already a leader in statewide communications systems. It now needs to expand communications capabilities for more broadband information transfer to all segments of its population. In terms of satellite communications, Kentucky has an experience base in distance learning and the application of sideband information transmission. Opportunities to develop these resources include the presentation of public education in a uniformly excellent manner to all students within the state. It is important to be willing to promote the virtual reality classroom and the teleported teacher. This process can become a partnership of public and private organizations that will continue to blur (for the better) the distinction between the schoolroom and on-the-job industrial training. The outcome is likely to be much-desired educational improvement.

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[5] National Science Board.

Likewise, networks for the evolution of commerce as cooperative and joint ventures between many small and individually capable organizations should be an expressed goal. To accomplish it, Kentucky research institutions should be considering projects that will reduce the size of transmission and control equipment, increase the speed of data transmission, and more fully integrate the human-machine potential of our existing communications networks. Futuristic factories will require machine-to-machine interfaces at an increasingly more complex level. Tremendous amounts of information will have to be transported from designing and prototyping machines, to the actual manufacturing process, most of which will be possible without human intervention but responsive to human control.

For example, it will soon be possible for a machine design change to be made as a result of the detection of a part failure in the field. Failure information will be fed to a design machine and from there to a manufacturing machine which will create the modified part. Any or all of these machines may be located remotely from each other. This entire process will take place without direct human intervention other than to monitor and acknowledge the process. Electronic Data Interchange (EDI) is not just the wave of the future. It is a here-and-now technology that is ideally suited to innovative Kentucky businesses. By exploring and implementing EDI, many small and otherwise uncompetitive Kentucky businesses can combine to create a virtual manufacturing entity capable of large-scale contracts and high-quality production.

> *Electronic Data Interchange is not just the wave of the future. It is a here-and-now technology that is ideally suited to innovative Kentucky businesses.*

All forms of public communications media are moving toward integrated, electronically based systems. The imminent deployment of interactive cable television and the national development of the "information superhighway" should stimulate cooperation between Kentucky educational and economic institutions. This will facilitate full information access for all individuals and businesses in the Commonwealth. The phenomenal growth of the Internet for commercial purposes will offer Kentucky businesses many great opportunities to capitalize on their individual expertise as it applies to the international marketplace. Global commerce is now not so much a dream but an eminently doable process whereby Kentucky companies can forge links with other providers and consumers to deliver Kentucky-born expertise, goods, and services to a waiting world.

The manufacture of communications tools by Kentucky companies will be limited to component assembly and packaging in the short term and may be stifled over the long term unless specific centers of academic and research excellence can be developed to support the innovation to commercialization process. At present, Kentucky industry does not have the potential for large-scale growth in the product development area of telecommunications. Historically, Kentucky's electronics industry has followed blueprints or designs of others (mostly from outside the state). Evolution of the internal capacity to expand this sector will ultimately be based on the capacity of academic and research institutions in the state.

In contrast, significant potential exists for the manufacture of sub-components. The manufacture of switches, connectors, and transmission media that will be the backbone of tomorrow's telecommunications industry is based on technology that is well within the current capabilities of Kentucky companies. The choice can be made to continue along the path of a job shop environment or to pursue the more ambitious process of facilitating the commercialization of innovations produced by Kentucky academic and research institutions. Development of the latter capacity to its highest potential is within the ability of academic institutions and telecommunications-based companies in the state and a critical step if this industry segment is to become a viable part of the 21st century economy.

Life Science Technology. Nano-technology medical devices, which can be used as human replacement parts or as diagnostic and surgical repair robots, are likely to be a significant technology force in the very near future. Coexistent with the development of these devices will be the technical implantation and remote control skills needed to implement their deployment. An example of this type of technology would be microscopic devices that "cruise the bloodstream searching for fat deposits and infectious organisms" they destroy.[6] Kentucky has several centers of medical excellence and is strategically located within consultation/collaboration distance of several more. Kentucky has demonstrated research and development capabilities in the micromachine arena and in microsurgery. By encouraging networking and cooperation among the medical research community and the health sciences applications arena, new products in nanotechnology diagnostic and surgical applications could be developed using existing resources. Such products would have worldwide marketability and enormous economic potential for Kentucky companies.

Also included in this category are pharmaceutical products that can be delivered to the patient through a variety of media. *Business Week* reported that the *drug distribution* field saw earnings jump 459 percent from 1991 to 1992.[7] With an already firm base in pharmaceutical research and potential for large-scale human and animal testing, this technology should be encouraged and supported by local and statewide initiatives. Existing infrastructures in pharmacology research need to be maintained and strengthened and additional encouragement given to pharmaceutical manufacturing companies to form or relocate in Kentucky to facilitate growth in this sector. In addition, the drug delivery research initiatives already underway need to be encouraged, as they will become a significant new method of health care delivery.

Biotechnology. Two areas of new development with potential involvement by Kentucky academic and industrial institutions are Recombinant DNA techniques and Monoclonal antibodies used in diagnostic testing. Recombinant DNA techniques (genetic engineering or "gene splicing") have spawned the most profitable success to date and are likely to continue to produce breakthrough drugs in the future.[8] Particularly in the areas of agricultural feed development and crop immunization, Kentucky has a significant investment in scientific and technical expertise. Capitalizing on engineered feeds for livestock, the biotechnology industry in Kentucky has the potential to profoundly impact the market over the next 20 years. Given the worldwide need for economies in food production, Kentucky companies must recognize their potential to make a major contribution to innovative, applied agricultural science.

Monoclonal antibodies and DNA probes are biotechnology products used in medical diagnostic testing. Examples include a technique for imaging fibrin clots, an early indicator of heart disease. More specially engineered substances that make entire new realms of testing possible will appear. As physician liability for malpractice increases, the demand for more accurate tests and more testing continues to grow.[9] Far and away the largest category of biotechnology patents issued by the U.S. Patent and Trademark Office in 1992 was drug, bio-affecting and body treating compositions. The potential for development and the process of administration of new pharmaceuticals in conjunction with this biotechnological activity is clearly one of the best opportunities for growth in Kentucky's technological future.

Materials Design. Advanced materials is an extremely broad and active area of technology development. Development in this area has arisen from increased awareness of the need to conserve existing natural resources and cope more effectively with a changing or deteriorating natural environment. The products being created respond to needs for lighter, more corrosion resistant products that will be stronger in new environments. As we push the present limits of microtechnology toward the concepts of nano-technology, we will be increasingly concerned with the structure and composition of the materials used to house products.

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[6] Petersen, J.L. (1993). *The road to 2012: Looking towards the next two decades.* Arlington, VA: Arlington Institute, p. 66.
[7] Dickinson, M. (1992). *Who invented what, 1992.* New Haven, CT: Opus Publications, p. 46.
[8] Dickinson, 24.
[9] Dickinson, 25.

While we anticipate tiny, self-contained computing/communicating devices that will be carried in our shirt pockets, those devices cannot become reality unless the package in which they are housed can be made lighter, smaller, and stronger than present materials permit. Of the three major categories of composite materials—ceramic matrix composites, polymer matrix composites, and metal matrix composites—Kentucky is already involved in the first category and various industries within the Commonwealth are researching or developing applications for the second.

> *Kentucky industry is capable of developing critical technical know-how, and the state's research community is beginning to demonstrate more intense interest in materials design.*

One of the major change agents in the field of advanced materials is the burgeoning automotive manufacturing sector, which includes major assembly plants and an extensive parts supply sector located throughout Kentucky. As transportation manufacturers seek to reduce weight, improve corrosion resistance and increase the strength of their final product, they will exert an inexorable force on their suppliers to seek new fabricating materials. Potentially, the ceramic and polymer matrix technology sectors could become a significant economic factor in Kentucky manufacturing, as well as in the scientific economy.

While much of our technology is now imported from other states or other countries and simply applied to existing industry, it is well known that Kentucky industry is capable of developing critical technical know-how, and the state's research community is beginning to demonstrate more intense interest in this emerging field. New wood-forming technologies, for example, are being used to create valuable dimensional lumber from previously under-utilized Kentucky hardwoods. This represents a significant advancement in Kentucky's efforts to develop new materials that capitalize on natural resources in this state. This also represents a noteworthy advance in the technological orientation of the wood processing industry that could lead to important advances in natural materials products that meet the same needs as manmade materials.

Environmental Remediation. Although not a technology product area noted by the Census Bureau, no sector of emerging technologies holds as much promise for Kentucky as does the arena of environmental remediation. Each of the Advanced Technology Product Areas cites pollution prevention and environmental remediation as an essential part of the manufacturing process. Environmental protection can be expected to be a required part of any new product development in the 21st century. In addition, worldwide industry has left a legacy of earlier industrial pollution that begs for remediation. Both the state and companies within it have done much to exploit the abundant natural resources with which Kentucky was endowed. Unfortunately, there are many instances in which exploitation turned into abuse and neglect. In recent years, state firms and state government have acted responsibly to recover and recycle resources and explored many opportunities for remediation. Four of the top 10 U.S. companies that filed for environmental remediation patents in 1992 had operational facilities in Kentucky.

The United States generates 180 million tons of municipal solid waste annually and landfills more than 130 million tons of this material. By the year 2000, more than 54 million tons of waste products will be without a suitable dump site. Waste paper and wood wastes are the single largest component of municipal waste—nearly half by weight. Bio-conversion of wood fibers will allow new uses for waste wood, mostly in building materials."[10] Rather than becoming a dumping ground for industrial and biological waste from other states, Kentucky can become a remediation and reprocessing center with economic potential coming from our positive location within the national transportation grid and our abundance of other raw feed stocks to add to the materials shipped in for recycling.

The potential technologies for development in Kentucky include sulfur dioxide emission control, oil waste water or acid mine drainage pollution remediation, and biodegradation of existing organic hazards. Unfortunately, this entire area is one in which the scientific and technical issues are more often than not victims of economic and political considerations. Funding for research activities that could lead to breakthrough advances in all areas of environmental remediation have been highly publicized but minimally financed. Kentucky has begun many initiatives and still has much to accomplish in this technological quarter, but the fact that we have begun and that we are aware of the need places Kentucky industry and technology infrastructure ahead of other states and most countries.

Conclusion

Time, change and rate of change will be the significant factors in shaping the future of Kentucky science and technology. The Information Revolution will provide the paradigm shift to stimulate this change. The infrastructure that will encourage and ultimately support the discovery, development and application of future Kentucky science and technology is now being put into place. It requires improvement, innovation and additional support from all sectors of the economy.

The obvious starting point is continuous improvement of the education system, particularly in the areas of mathematics and science. This needs to be followed by an emphasis on attracting and nurturing technology pioneers in Kentucky. Successful accomplishment of these first two steps will strengthen Kentucky science and technology industries and prepare them to become competitive factors in the global economy of the 21st century. The third part of this forecast presents those specific technologies which I believe hold the greatest potential for development within the economic framework of the Commonwealth. The major and projected strengths of Kentucky scientific expertise and developable technologies lie in the fields of telecommunications, medical products, biotechnology, advanced materials, and environmental remediation. While it is impossible to accurately predict specific success or failure in any one of these cited fields and equally impossible to rule out the advent of an entirely new area of advancement unrelated to the cited fields, it would appear likely to this observer that a concentration of economic and human effort in the fields noted offer an effective use of the limited developmental resources available over the next decade.

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[10] Dickinson, 39-40.

Ready Or Not: Kentucky in the Global Economy

This paper examines the globalization of the Kentucky economy. A summary of the international nature of the Kentucky economy illustrates how well Kentuckians are meeting the opportunities offered by globalization and demonstrates how trade and investment liberalization are helping and/or hurting Kentucky residents. Trends in exports, imports and foreign direct investment are examined, as well as the potential effects of globalization on income distribution and employment.

By Chris Sauer
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Over the course of the 1990s, the United States has moved in unprecedented ways toward full participation in the global economy. The growing importance of foreign trade and investment has been one of the most significant trends in recent U.S. economic history. The North American Free Trade Agreement (NAFTA) is just one of a number of pacts that has served to illustrate the unprecedented consensus about the appropriateness of free trade that now exists among most nations. Gone are the mercantilism and the arranged trade among political allies of the past. In the coming millennium, goods and services will sell freely throughout the world.

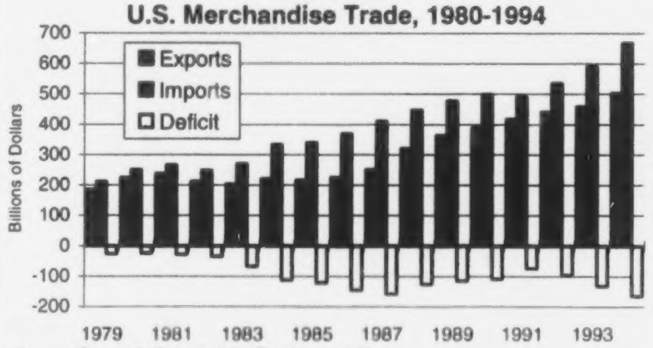
But policymakers, academics and citizens alike continue to debate the relative benefits associated with opening our economy further to world trade and investment. While many see unlimited opportunity and potential, others see the forces of economic ruin at work. Clearly, the dynamics of globalization are producing economic benefits for workers, communities and states such as Kentucky, even as they generate competition that some workers and firms cannot match. The challenge for states like our own is one of capturing a greater share of the benefits of globalization while minimizing the negative consequences. To do so, it will be necessary to better prepare workers and firms to compete in a global arena while mediating adverse consequences.

The Dynamics of Global Trade

While the United States has always been an advocate of liberalizing trade around the world, an increased emphasis has been evident over the past 15 years. In response, the volume of U.S. trade has risen dramatically. Imports increased 247 percent between 1980 and 1994 while exports increased 172 percent over the same time period. The United States has run a trade deficit over each of the years in this period, not as a result of the increased emphasis on globalization, but rather due to other macroeconomic phenomena. The real significance of these developments lies in the fact that an increased emphasis on free trade has been accompanied by rising volumes of imports and exports, which produce jobs and income around the globe.

Forces other than trade agreements are also giving rise to expanded global trade. Increased specialization of workers and gaps in productivity make some areas more conducive for the production of certain products and services. Fluctuations in exchange rates also make imports and exports more or less attractive to particular countries. As illustrated in Figure 20.1, year-to-year changes in merchandise trade demonstrate market responsiveness to varying currency exchange rates. Since 1985, changes in exports and imports has vacillated dramatically. As the strength of the dollar fell in the late 1980s, import growth slowed and eventually began to contract. While currency fluctuations should not affect magnitudes of trade over the long run, they help explain some of the recent trends in world trade, particularly the large U.S. trade deficit with Mexico. National trade deficits, however, are the result of macroeconomic choices, and only structural changes in U.S. economic policy (such as increased national savings or a lower federal budget deficit) could abolish a trade deficit.

FIGURE 20.1
U.S. Merchandise Trade, 1980-1994

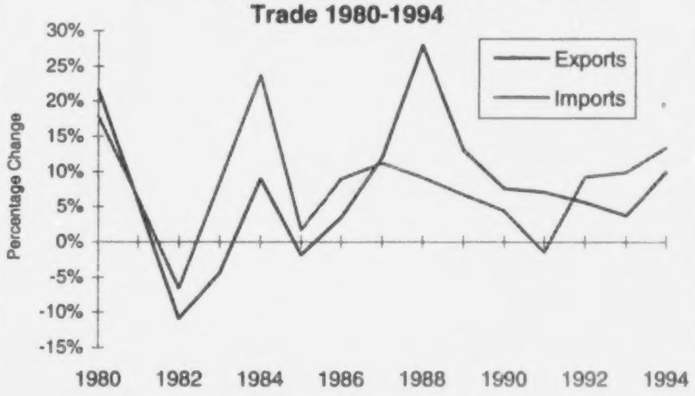


Source: Economic Report of the President, 1996

The prospect for export growth has increased significantly as a result of the North American Free Trade Agreement and the General Agreement on Tariffs and Trade. First signed in 1948, GATT became far more important with the enactment of the agreements reached during the Uruguay Round of talks. Taking effect in 1995, the new GATT[1] provisions are the most comprehensive rules on trade ever agreed upon.[2] Signed by 117 countries, GATT promises to have the most pronounced impact on U.S. and Kentucky trade. NAFTA, the well-known agreement to create a free-trade zone between Canada, Mexico and the United States is also providing many new opportunities for exports.

Many critics of free trade have been quick to point to the poor U.S. trade performance with Mexico since the enactment of NAFTA to support their claims about the dangers of free trade. The U.S. trade position with Mexico deteriorated from a surplus of $1.4 billion in the first 11 months of 1994 to a $14.4 billion deficit in the first 11 months of 1995.[3] This deterioration does make the optimistic forecasts for NAFTA seem misguided, but much of the decline in exports to Mexico can be explained by the country's currency instability. U.S. exports to Mexico fared better than those of other Mexican trading partners. Mexican officials slapped 15 percent higher tariffs on most incoming goods, but the provisions of NAFTA prevented this action against U.S. and Canadian goods. Overall, U.S. exports to Mexico remained higher during 1995 than they had been in 1993, prior to the enactment of NAFTA.[4] So while U.S. exports had difficulty selling to Mexicans suffering from a devalued *peso*, U.S. exports fared much better than they would

FIGURE 20.2
Percentage Change in U.S. Merchandise Trade 1980-1994



Source: Economic Report of the President, 1996 have without NAFTA. The Council of Economic Advisors predicts that a return to stability of the Mexican currency should help to bolster future imports of U.S. goods.

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[1] As of January 1, 1995, the World Trade Organization replaced GATT.
[2] 1995, Baldwin, et al.
[3] Economic Report of the President. (1996).
[4] Economic Report of the President.

Exports and Imports in Kentucky

At the fall 1995 meeting of the American Apparel Contractors Association, no one evaded judgments about the impact of trade liberalization. According to board chair Irwin Mistrock, business had fallen off 20 percent from the previous year, with over 40 percent of that business moving overseas. Mistrock said, "NAFTA and GATT (General Agreement on Tariffs and Trade) have really hurt us."[5]

Losing industries are not the only story, however. Kentucky businesses and farmers have been exporting products for decades, and changes in trade laws have provided new opportunities, as well as new competitors. Companies like Maker's Mark are finding new markets as a result of trade liberalization; its exports have grown between 20 percent and 30 percent every year of the 1990s. The company now exports 50,000 cases of bourbon a year, or one fifth of its total sales.[6] Last year alone, Toyota exported nearly 70,000 automobiles assembled at its Georgetown, Kentucky, plant. With the completion of a planned expansion at the plant, that number is likely to increase.[7]

For Kentucky, the future of export markets looks particularly promising in several areas, as illustrated in Table 20.1. Strong growth is predicted for exports of agricultural products and hardwoods, both of which are produced in the Commonwealth. As documented by Michael Reed,[8] the combination of free trade agreements and rising standards of living around the world bode well for agricultural products. Residents of countries like Korea and China are beginning to consume meat products on a heretofore unseen level.[9] At the same time, draughts around the world have depleted food supplies and pushed prices to record highs for the decade. Moreover, these events are happening as new federal agricultural legislation goes into effect and creates what many believe will be another

TABLE 20.1
Kentucky Industries with Export Development Potential

Industry	No. of Firms in KY	Avg. 1990 Employment
Sawmills and Planing Mills, General	133	28
Prepared Feeds, NEC	83	12
Sausages and Other Prepared Meats	37	80
Meat Packing Plants	33	82
Plastic Materials and Resins	25	178
Surgical Appliances and Supplies	25	61
Electrical Industrial Apparatus, NEC	21	69
Electronic Components, NEC	20	216
Relays and Industrial Controls	18	134
Switchgear and Switchboard Apparatus	12	200
Tobacco Stemming and Redrying	11	130
Electrical Equipment and Supplies, NEC	11	160
Logging	8	26
Chewing and Smoking Tobacco	6	187
Communications Equipment, NEC	6	83
Synthetic Rubber	5	366
Semiconductors and Related Services	5	84
Paper Mills	4	271
Dental Equipment and Supplies	4	51
Surgical and Medical Instruments	4	19
Pulp Mills	2	496
Cigarettes	1	3356
Cigars	1	200
Musical Instruments	1	10

Source: KY World Trade Center

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[5] United We Stand America. (1996, January). *NAFTA impact update*. [On-line]. Available www.uwsa.org/hey/nafta1.html.

[6] Chappell, L. (1996). The world buys American. *Kentucky Commerce*.

[7] Chappell, L. (1996). Like bourbon and bluegrass. *Kentucky Commerce*.

[8] See " Agricultural exports: Opportunities for Kentucky's farmers," by Michael Reed in this volume.

[9] Global per capita consumption of beef, pork, and poultry has risen 11 percent over the past decade. Burns, G. (1996, May 20). The new economics of food. *Business Week*.

boost for U.S. agricultural exports, although its specifics could help U.S. businesses more than family farmers.[10]

Overall, Kentucky's export market has fared better than the nation's. According to a 1995 report by the Kentucky World Trade Center, the state's rate of export growth has exceeded the U.S. export growth rate since 1989.[11] The authors of the report also note that Kentucky's exporting sector has become an increasingly important portion of the Commonwealth's economy. Using aggregate personal income as a measure of overall economic activity, the report finds export growth of 12.7 percent from 1989 to 1994, compared to overall economic growth of 6.1 percent.

But globalization will continue to demand more of all enterprises, as well as public infrastructure, in return for access to its enormous potential. While GATT and NAFTA have increased prospects for doing business abroad, they have also increased the number of competitors in each market. New industry standards, like those contained in the ISO 9000 accords, require exporting companies to be well versed in quality standards and to manufacture products accordingly. Small businesses, the businesses most prevalent in Kentucky, face particular difficulty meeting these demanding standards. A 1995 report by the Kentucky Long-Term Policy Research Center, *Factories, Farms and Free Trade*, found that many rural Kentucky firms are either inadequately prepared for or uninterested in the potential benefits of free trade.

One industry that faces the possibility of further decline as a result of GATT and NAFTA is the apparel industry. Some well-publicized plant closings in Kentucky in recent months and years have broadened awareness of this problem. Low-wage, low-skill industries, like apparel, are most susceptible to competition from the developing world where wages and working conditions are often substandard. As Schirmer and Taylor note, apparel's future in the Commonwealth is uncertain in the age of globalization. Nonetheless, certain strengths of Kentucky's apparel industry, namely its relative growth in the late 1980s and its larger than average plant size, offer hope for its future viability.

Overall, export prospects are brightened by trade liberalization. While a U.S. trade deficit may persist, Kentucky businesses still need to seize the opportunities made available by globalization. New markets offer chances to increase production, profits, and employment. We should be looking for opportunities to export, since jobs supported by goods exports pay 13 percent more than the national average.[12] But the aggressive pursuit of new sales should not be accompanied by a neglect of opportunities nearer to home. The greatest benefits of free trade will be realized when companies work to take fullest advantage of opportunities both here and abroad.

State and local policymakers should assist businesses interested in exporting by developing and expanding the state's supportive infrastructure. Businesses, small businesses in particular, with the potential to develop export sales often do not have the resources needed to pursue these opportunities. The state could provide technical assistance to businesses looking to expand their sales beyond U.S. shores. Often, these businesses need guidance about the standards for export (such as the aforementioned ISO 9000), procedures, and institutions governing trade. Offices in foreign countries, such as the state's presence in Japan and Mexico, also offer Kentucky businesses a valuable aid in moving into these markets. Expansion of these efforts should be considered. Exporting businesses also need access to quality systems of transportation and affordable energy resources. State and local governments, if they wish to increase the business community's foreign trade, must not lose focus of the importance of needs in this area.

There is no reason to believe that the current trend of export growth will not persist. The emergence of economic affluence in certain developing nations will create millions of new consumers for U.S. products. The strengthening economies of Europe and Japan also should continue to demand U.S. goods. According to President Clinton's "National Export Strategy," GATT and NAFTA should help increase U.S. exports from $660 billion in 1993 to over $1 trillion by the year 2000, supporting over six million new jobs.[13] Kentucky businesses can capture some of these increases if they are willing to search for opportunities and if they are assisted by thoughtful government policies and programs.

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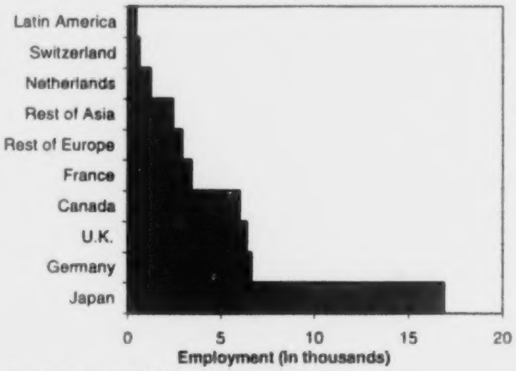
[10] In "FAIR is foul for farmers and consumers," Larry Swartz and Katherine Ozer depict the Farm Bill of 1996 as a boon to corporate agricultural interests at the expense of the family farmer. Texas A&M economist Ronald Knutson predicts that up to half of medium-size operators could go out of business if commodity prices plunge or crop disasters occur (1996, Farm Aid).

[11] Baldwin, W.T, Erfani, G.R., Haywood, C.F. (1995, June 9). *The impact of global trade on the Kentucky economy*. Lexington, KY: Kentucky World Trade Center.

[12] Economic Report of the President, 1996

Foreign Direct Investment in Kentucky

FIGURE 20.3
Manufacturing Employment of Affiliates in Kentucky, By Country of UBO*

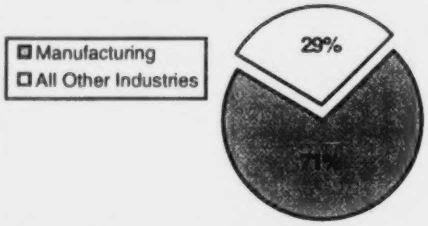


** UBO is Ultimate Beneficial Owner.*
Source: US Department of Commerce, 1995.

One of the most noticeable changes in the Kentucky economy as a result of globalization is the increased presence of foreign firms and factories. Encouraged by relatively low-wage rates and a weak dollar, foreign firms have found it advantageous to move operations to the United States. Kentucky has been the beneficiary of a number of these decisions. While the Toyota plant and its suppliers attract the most attention, firms in a range of industries from diverse countries have chosen to open operations in Kentucky. In 1992, the U.S. Department of Commerce reported that foreign firms employed more than 70,000 Kentuckians.[14]

Obviously, investments like the Toyota plant represent the most visible manifestation of foreign direct investment (FDI): a foreign firm builds a facility and begins to produce in the United States. Another obvious impact is the jobs that investments like the Toyota factory create for Kentucky workers. But this type of investment represents only a portion of the total FDI[15] picture.

FIGURE 20.4
Property, Plant & Equipment of Affiliates in Kentucky



Source: U.S. Dept. of Commerce

Where are foreign investors putting their dollars in Kentucky? Considering that manufacturing accounts for over a quarter of Kentucky's gross state product, by far the largest of any sector, it is not surprising that it accounts for a large portion of FDI in Kentucky. The Bureau of Economic Analysis reports that 71 percent of the gross property, plant and equipment of foreign affiliates in Kentucky are the investments of companies classified as manufacturing entities.

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[13] Baldwin, et al. National export strategy.

[14] The Department of Commerce describes a U.S. affiliate as foreign when over 10 percent of the company is controlled by a company outside the United States.

[15] Foreign direct investment (FDI) describes the earnings retained by U.S. established subsidiaries or branches of foreign companies as well as the transfer of funds from the parent firms to their subsidiaries. It does not include portfolio investment by foreigners, when they chose to buy stocks, bonds, or other private and government-held securities. Furthermore, it does not account for funds borrowed within the United States by foreigners to invest in their U.S. subsidiaries or branches. It does include the purchase of existing companies and real estate. (Ondrich and Wasylenko, 1990). So calling FDI investment is somewhat misleading. By including real estate and existing company transfers, it terms a great deal of what are in reality asset transfers as investments. In reality, FDI measures the flow of financial assets.

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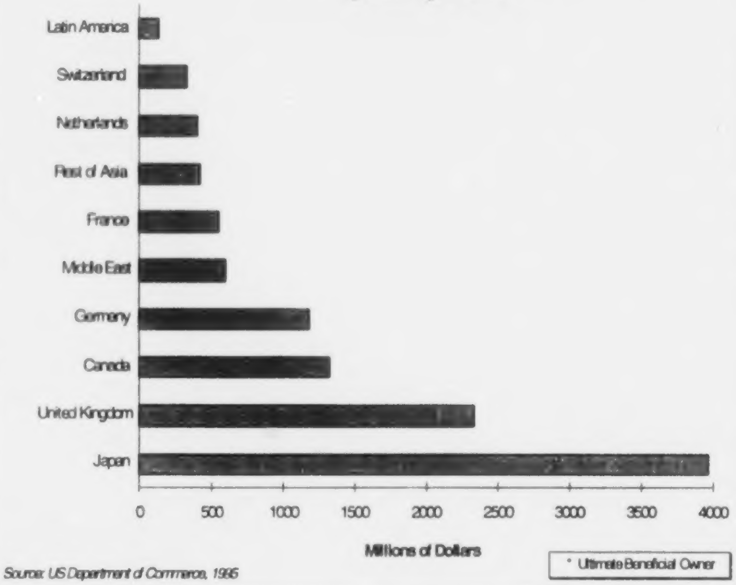

FIGURE 20.5
Gross Plant and Equipment of Kentucky Affiliates by Country of UBO*

Source: US Department of Commerce, 1995

* Ultimate Beneficial Owner

Which countries are investing in Kentucky? Unlike in most states, the Japanese are by far the greatest foreign investors in the Kentucky economy. Overall, the British invest the most into the U.S. economy. Perhaps Japanese strength in manufacturing attracts them to the Commonwealth. As Figure 20.5 shows, a wide array of investors from many countries have holdings in Kentucky.

Why are the investors choosing Kentucky? Location and low wage rates play a central part in some decisions to locate new facilities. Certainly, incentive programs offered by state and local governments are a factor, but no clear consensus exists on the role of tax inducements and other factors. According to Ondrich and Wasylenko, "Higher taxation in general, right-to-work laws, and unionization of the workforce . . . are generally not found to have a statistically significant effect on FDI in states."[16] Because an amalgamation of factors usually leads to the decision to invest in a particular area, it is difficult to isolate factors that account for the extent of FDI in Kentucky.

FDI: A Part of Kentucky's future? Many experts anticipate a new wave of FDI on the horizon. But Kentuckians cannot wait for FDI to come to us. If we wish to reap its benefits, we must work to make Kentucky an attractive place for investment in new and expanding enterprises. Howard Gray, whose Lexington construction company has built more than 140 Japanese factories in the United States, told an Owensboro audience interested in attracting Japanese investment to Daviess County: "It must be an all-out effort. You must invest time and money in learning their culture . . . You can't wait for the customer to come to you."[17]

Gradually, Kentucky is becoming a player in the global economy, as foreign trade and investment comprise more and more of the state economy. Most economists agree that the resultant development is an efficient outcome, one that can be expected to maximize social welfare.

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[16] Ondrich, J., Wasylenko, M. (1993). *Foreign direct investment in the United States: issues, magnitudes, and location choice of new manufacturing plants*. Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

[17] Owensboro not giving up on luring Japanese. (1996, July 11). *The Courier-Journal*, p. B4.

The Effects of Globalization

Income Distribution. Many critics of free trade have bemoaned its potentially deleterious effects on worker's wages. The proverbial "giant sucking sound" symbolizes the migration of low-skill jobs across borders and the resulting drop in U.S. employment. In turn, it is argued, incomes are become increasingly stratified, creating inequities and, over the long term, the potential for social upheaval. Without doubt, income stratification has worsened in the United States, particularly since the early 1980s.[18] This trend, however, is probably not the result of any single factor but more likely a combination of several circumstances. Whether greater openness to trade is a cause any of income stratification is more difficult to determine.

Harvard economist Robert Lawrence concludes that trade has played only a small role in the stagnation of industry wages.[19] Instead, Lawrence's analysis places the blame for poor wage growth on the accompanying slow growth in productivity. Lawrence believes that the effects of trade are most likely to be seen on relative industry wages. The Brookings Institution's Gary Burtless agrees that many factors are at work. While Burtless observes that liberal trade most definitely is part of picture of worsening job prospects for America's unskilled workers, he concludes that international trade "has not been the decisive factor in the trend toward greater earnings inequality."[20]

On the other hand, Lester Thurow argues that trade has and will continue to bring down real wages in the United States.[21] Believing the Federal Reserve too eager to curb inflation, Thurow argues that trade can only lower wages when coinciding with an overabundance of labor. According to Thurow, if the forces of factor price equalization resulting from globalization continue to operate in a world of slack labor markets in the United States, the rate of decline in real wages will only accelerate.

Economist Thomas Palley also points to globalization as one of the factors suppressing wages in the United States. While acknowledging the benefits of free trade between similar partners, Palley decries open trade based solely on wage differentials. This type of trade, which Palley categorizes as typical between the United States and the developing world, promotes a "race to the bottom" that "lowers wages, job security, and social-welfare standards."[22]

While the extent to which globalization has affected U.S. wages remains uncertain, it does appear plausible that free trade agreements have exerted downward pressure on compensation. Workers in low-skill, low-wage jobs are particularly vulnerable. Kentucky's manufacturing base, particularly in its rural areas, contains many jobs in this category. These workers, who face stagnating wages or potential unemployment, could ultimately be the big losers as globalization and the effects of free trade expand.

Employment. What do the employees at the Toyota plant in Georgetown have in common with the workers of the OshKosh B'Gosh plant in Marrowbone? Very little. The former group can claim that their high-skill, high-wage jobs are the result of globalization. The latter group can claim that their former jobs moved off shore because of that same trade and investment liberalization.[23] As is typical of a free marketplace, the competition that globalization generates produces winners and losers, but high skills are clearly an edge for firms and workers.

After growing for all but one of the past 12 years, employment in Kentucky's apparel factories dropped in 1994. Whether this is an aberration or a new trend is unclear. Manufacturing employment did grow overall between 1993 and 1994 by nearly 10,000 jobs, but workers in industries like apparel were not fortunate enough to be part of the growth.[24] It is also unclear whether certain areas were affected by the changing employment conditions more than others.

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[18] See A. Chandra's chapter on income inequality in Kentucky in this volume.

[19] Lawrence, R.Z. (1995, January). U.S. wage trends in the 1980s: The role of international factors. *FRBNY Economic Policy Review*.

[20] Burtless, G. (1996, Spring). Worsening American income inequality: Is world trade to blame? *The Brookings Review*.

[21] Thurow, L. (1996, March-April). The crusade that's killing prosperity. *The American Prospect*.

[22] Palley, T.I. (1996, July). Recipe for a depression: The forces making for an economic collapse. *Atlantic Monthly*.

[23] OshKosh B'Gosh to close Marrowbone plant. (1995, August 3). *Clinton County News*, p. A5.

At this stage in the process, it is impossible to account for the employment effects of globalization with any certainty. Some new employment opportunities will arise as other jobs are transferred to other regions or countries. Generally, globalization should provide jobs in areas of relative strength in skill and productivity while eliminating jobs where no competitive advantage exists. The growth of employment in relatively high-skill jobs suggests that we redouble our efforts to train workers, particularly those low-skill workers who are most vulnerable to the possibility of job losses.

What does FDI mean for Kentucky's residents? Mirroring the debate over the positives and negatives of free trade, the debate over the value of FDI has been heated and divisive. Proponents argue that FDI increases productivity, supplements employment, and offers better prices to consumers. Critics believe that FDI only provides lower paying jobs and reduces the home country's international investment position. Both arguments have some validity.

FDI does appear to increase productivity. Carnegie-Mellon Professor Richard Florida concludes that FDI is key to improving U.S. productivity. He argues that FDI, much more than trade, has led to productivity growth by moving technology from more advanced countries to other countries that have not been as organizationally or technologically innovative.[25] This, in turn, places pressure on domestic producers, who must improve their productivity to compete with the transplants. Florida observes that the migration of management practices often coincides with FDI. For example, he cites Toyota's "just-in-time" inventory and parts procurement systems. By keeping inventories small and maintaining the flexibility to purchase parts as needed, the factory minimizes complicated inventory management and storage while maximizing its capacity to react to changing needs in production. Florida also notes the ways in which Toyota's suppliers have adapted to these demands, increasing productivity and spreading the knowledge to yet another sphere of supplier facilities.

If FDI increases productivity, how does it affect wages? Economic theory posits that wages are a function of worker productivity. Wages should, therefore, be expected to rise as productivity rises. It does appear that workers in foreign affiliates in the United States are paid more than their counterparts who perform similar duties for U.S.-owned firms in this country. Research by Ned Howenstine and Dale Shannon shows that affiliates whose ultimate owner beneficiaries live in one of the six countries that invest the most in the United States pay their workers more for similar tasks than U.S.-owned companies.[26]

Critics of FDI argue that foreign firms only use relatively unskilled labor in their U.S. operations, choosing to keep the more lucrative, skill-based positions at home. This is particularly believed to be the case in research and development positions. Edward Graham and Paul Krugman analyze compensation and value added per employee for U.S. affiliates of foreign firms as well as for U.S. firms, however, and they note that no systematic differences exist between foreign and domestic firms in compensation or value added, particularly in manufacturing. They conclude, the "data . . . do not provide any support for the view that foreign firms typically keep the good jobs or the high-value-added activities at home."[27] Graham and Krugman argue that no evidence can support the claim that U.S. affiliates of foreign companies offer worse jobs than their U.S. counterparts.

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[24] Schirmer, P., Taylor, M. (1995). *Farms, factories and free trade*. Frankfort, KY: Kentucky Long-Term Policy Research Center.

[25] Florida, R. (1995). Conditioning investment is a losing strategy. In C. A. Beltz (Ed.). *Foreign investment debate: Opening markets abroad or closing markets at home?* Washington, DC: AEI Press.

[26] Howenstine, N.G., Shannon, D.P. (1996, March). Differences in foreign-owned U.S. manufacturing establishments by country of owner. *Survey of Current Business*. Washington, DC.

[27] Graham, E.M., Krugman, P.R. (1990). *Foreign direct investment in the United States*. Washington, DC: Institute for International Economics.

Almost everyone seems to agree that FDI increases employment, although the relationship is not as obvious as it would appear. A more thorough examination shows that FDI probably does not influence the aggregate amount of employment in the United States as much as it helps determine the physical allocation of jobs among regions or states. Graham and Krugman report that FDI has probably had very little effect on levels of employment in the United States. They argue that since levels of employment are determined by supply and not demand, FDI could have noticeable effects on employment only over the very short run. In fact, they observe, "The net impact of FDI on U.S. employment is approximately zero."[28] While their observations are probably correct, FDI can cause jobs to migrate from one region or state to another, from high-wage areas to relatively low-wage Kentucky, for example. Julius concludes that plant locations resulting from FDI can boost employment, particularly in high-unemployment areas. Echoing the sentiments of Graham and Krugman, Julius argues that many of the employment gains touted by proponents of FDI are jobs created at the cost of other jobs. Workers move from plant to plant, but unless there is rampant regional unemployment, total employment cannot be noticeably increased by FDI.

Relatively little research has addressed the effects of FDI on the distribution of income. An econometric study by Frank and Freeman[29] looked at the distributional effects of FDI and found that capital inflows clearly benefit U.S. workers while lowering the income of U.S. owners of capital. FDI appears to benefit workers at the expense of existing domestic companies who face intensified competition. The employees of the domestic firms, however, could lose if fresh competition from U.S. affiliates of foreign companies causes domestic firms to downsize or close. Workers employable in an industry likely to be the beneficiary of investment from foreign sources are better off with large amounts of FDI in these industries.

Broadly, FDI has produced positive outcomes for Kentucky. Foreign firms provide coveted high-wage jobs that are preferable to many of the jobs lost as a result of FDI. Moreover, workers are being trained by these foreign affiliates and developing skill levels that are likely to be more transferable. FDI also positively influences worker and firm productivity in Kentucky, both by training workers in high-skilled tasks and work systems and by offering Kentucky businesses innovative examples of management techniques. Thus, the positives of FDI appear to outweigh the negatives. We should do our best to attract more FDI to the Commonwealth.

Externalities: What are the more subtle effects of globalization? While most of the effects of globalization are fairly obvious, some of the effects are more subtle and less direct in nature. For example, Kentucky affiliates of foreign companies spend resources to train their workers. The presence of these companies, while providing the obvious benefit of employment, also adds to our human capital, endowing workers with more refined skills that are in demand in the marketplace. Just as some workers are disheartened by the failure of their companies to compete successfully, others are becoming valuable members of internationally competitive enterprises. These externalities are small relative to the more obvious and direct effects, but they help develop the capacity of our labor force and the enterprises in our economy.

Conclusion

Kentucky is already a strong participant in the global economy. International investors have recognized the value that Kentucky offers as a base for manufacturing. And we are beginning to trade more of our products in global markets. While globalization hurts some of our residents and helps others, we are no longer in a position to debate its propriety. National trade policy dictates to us that we will compete in a global economy. To fail to take up this challenge will only ensure that relative poverty will continue to define us. Thus, we should take steps at the state level to help those most hurt by globalization. Most importantly, we should continue to focus on worker education and training that will permit low-skill, low-wage workers to compete in high-skill, high-wage industries. At the same time, we need to carefully monitor the conditions of our family farms in an effort to prevent the purported benefits of free trade from eroding the viability of a valued and traditional way of living. Free trade can benefit small farmers, only if they are given the same opportunities as those open to large, corporate farmers. Globalization grants us new opportunities and challenges. People around the nation and around the world are prepared to meet those same challenges and to take advantage of our opportunities if we are not ready to do so ourselves. Like it or not, we must prepare or be left behind.

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[28] Graham, E.M., Krugman, P.R. (1990). *Foreign direct investment in the United States*. Washington, DC: Institute for International Economics.

[29] Frank, R.H. and Freeman, R. (1978). *Distributional consequences of direct foreign investment*. New York: Academic Press.

Resources

Julius, D. (1990). *Global companies and public policy: the growing challenge of foreign direct investment.* New York: Council of Foreign Relations Press.

Kane, M.J. (1990). *An assessment of the export potential of Kentucky industries: a manufacturing profile.* Lexington, KY: Kentucky World Trade Center.

U.S. Department of Commerce. (1995). *Foreign direct investment in the United States.* Washington, DC: Author.

Agricultural Exports: Opportunities for Kentucky's Farmers

U.S. agricultural exports reached an all-time record high in 1995. Exports in essentially all categories were up substantially from the previous year. The most significant growth in agricultural exports has come in high-valued agricultural products and highly processed food products. The trend toward higher-valued U.S. agricultural exports is expected to continue as trade liberalization increases throughout the world. In many regards, Kentucky is well positioned to benefit from the increased trade when it comes to raw and semi-processed agricultural products. However, if Kentucky's agricultural producers are to benefit more from the increasingly global food market, they must take better advantage of increased trade opportunities in other processed food products

By Michael Reed
University of Kentucky

Agriculture is a major enterprise not only for the United States, but also for Kentucky. Farm-level production of agricultural products may only account for 1.1 percent of Gross Domestic Product (GDP) for 1992, but if farm input suppliers, food processing companies, and other firms associated with agriculture are included, then agriculture accounts for 15.7 percent of GDP.

Agriculture involves much more than simply farm level production. It includes farm input suppliers and service providers, transportation firms, agricultural lenders, and food processors. The latter group is extremely important for the present paper because the United States is increasingly exporting food in more processed forms. The importance of these firms will only increase in the future as people from all countries become more reliant on the food marketing system to provide convenience foods.

U.S. agriculture is highly diversified, with large volumes of grain, livestock, dairy, fruits, vegetables, and other crops produced, and the United States is an exporter of most of these agricultural products. Kentucky agriculture is more concentrated in certain commodities, particularly tobacco, grains and livestock, and trends in U.S. exports reflect Kentucky exports. Tobacco is the most important crop in Kentucky, with production varying from 350 to over 500 million pounds annually. Other crop production is more stable on an acreage basis, including corn (usually encompassing about 1.2 million acres), soybeans (at about 1.2 million acres), and wheat (at about 0.4 million acres). Recent changes in farm policy, specifically the Freedom to Farm Act, may markedly change future acreage decisions for these other crops in Kentucky. Livestock enterprises in Kentucky are changing much more rapidly than the crop enterprises.

Broiler production in Kentucky has increased rapidly since 1991 (from $24.9 million in 1991 to $71.2 million in 1994). With the state's new chicken production and slaughter facilities, those both recently built and announced, this high rate of growth will continue in the next few years. Beef is the largest livestock industry in the state and the state's beef herd (in 1994, the herd was 2.65 million head) has been expanding since 1990. However, the pork industry has been in a clear downward trend since 1988, with only 800 thousand head in the state in 1994.

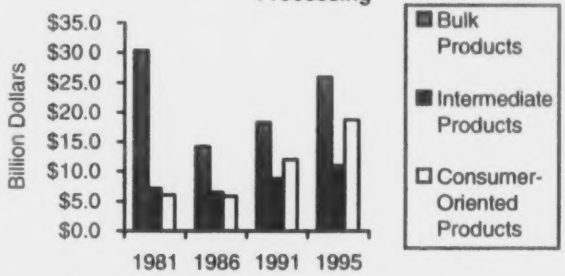
The Kentucky food processing industry is more difficult to characterize because data from the Census of Manufacturers comes out only every five years. The most recent data are for 1987, though the 1992 figures will soon be released. In 1987, Kentucky food processing was dominated by beverage, meat, and dairy processing (value-added in these enterprises were $714 million, $178 million, and $140 million, respectively). Kentucky processing of fruits, vegetables, and other food products was small relative to these other industries. Obviously, the beverage industry is dominated by distilled spirits.

Aggregate U.S. export data must be used to investigate how Kentucky has been and will be impacted by changes in agricultural and food exports. There is no way to document actual export flows from Kentucky firms to overseas locations (especially since some products change ownership multiple times before they are ultimately exported). Nonetheless, U.S. exports of food products positively impact Kentucky producers, so understanding future U.S. export patterns for commodities produced in Kentucky will provide information on market developments for Kentucky producers too.

History of U.S. Agricultural Exports

U.S. agricultural exports set an all-time record high in 1995, totaling $55.8 billion, an increase of $10.1 billion above 1994 exports. Before 1994, the previous record high was in 1981, when U.S. agricultural exports totaled $43.3 billion. Because saturated U.S. food markets are unable to absorb supply increases without significant price reductions, there is no question that international markets are the key to any future increases in demand for U.S. agricultural output. However, this has been the case for a number of years.

FIGURE 21.1
U.S. Agricultural Exports by Stage of Processing



Source: Foreign Agricultural Service, U.S. Dept. of Agriculture

During 1981, U.S. agricultural exports were dominated by bulk commodity exports—those exports whose value is less than $400 per metric ton (such as corn, wheat, soybeans and rice). At that time, bulk agricultural products accounted for 61 percent of U.S. agricultural exports. Since 1986, there has been a clear trend away from exporting bulk products (Figure 21.1), though 1995 was an aberration where bulk commodity exports soared. As will be discussed later, increased incomes abroad and trade liberalization have given U.S. food processors opportunities to export more consumer-oriented products.

TABLE 21.1
U.S. Agricultural Exports by Product Category, 1990-1994
(in million dollars)

	1990	1991	1992	1993	1994
Animals	$ 413	$ 575	$ 486	$ 398	$ 468
Meat Products	$ 2,557	$ 2,853	$ 3,339	$ 3,325	$ 3,704
Poultry Products	$ 721	$ 818	$ 928	$ 1,101	$ 1,570
Wheat and Products	$ 4,033	$ 3,516	$ 4,674	$ 4,909	$ 4,315
Feed Grains and Products	$ 7,150	$ 5,869	$ 5,881	$ 5,174	$ 4,912
Fruits and Preparations	$ 2,359	$ 2,498	$ 2,732	$ 2,764	$ 3,090
Vegetables and Preparations	$ 2,302	$ 2,615	$ 2,871	$ 3,277	$ 3,875
Oilseeds and Preparations	$ 5,709	$ 6,396	$ 7,197	$ 7,270	$ 7,208
Other Exports	$14,119	$14,064	$14,822	$14,390	$16,562
Total Exports	$39,363	$39,204	$42,930	$42,608	$45,704

Source: Foreign Agricultural Service, U.S. Department of Agriculture

The trends in U.S. agricultural export composition between 1990 and 1994 reflect the move toward more processed food exports (Table 21.1). U.S. exports of wheat (and its products), feed grains (and their products), animals, and tobacco have either fluctuated or decreased between 1990 and 1994. There are more countries that can export such products, so U.S. exports find it difficult to compete with other export suppliers. Exports of meat, poultry, fruits (and their preparations), vegetables (and their preparations), and oilseeds have grown persistently during the period. These latter products have more added value associated with them and are generally exported in a more processed form. U.S. food processors have been able to supply these products to foreign markets at competitive prices. This move toward U.S. exports of higher-valued, more processed products will continue in the future as long as American food products can meet the competition internationally because of lower tariffs on processed foods and the move toward convenience foods in other countries.

East Asian and North American countries are the leading countries of destination for these agricultural exports (Table 21.2), not European markets. Japan dominates other countries as a destination for U.S. exports, alone accounting for 20 percent of U.S. exports, but Canada is also important. Canadian imports of U.S. food before the Canada-U.S. Free Trade Agreement were much smaller, so trade liberalization has greatly benefited U.S. agricultural exports. Income growth and trade liberalization in Mexico (associated with the North America Free Trade Agreement, NAFTA) will have even larger beneficial effects on U.S. agricultural exports because of agricultural production constraints in Mexico. Nonetheless, Mexico is still the third leading destination for U.S. agricultural exports.

TABLE 21.2
U.S. Agricultural Exports by Leading Destinations, 1990-1994
(in million dollars)

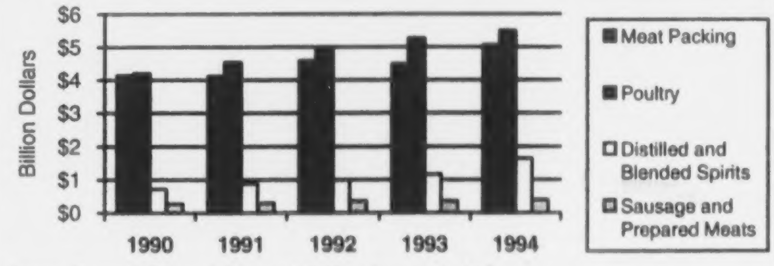
	1990	1991	1992	1993	1994
Japan	$ 8,104	$ 7,728	$ 8,437	$ 8,738	$ 9,267
Canada	$ 4,197	$ 4,554	$ 4,902	$ 5,271	$ 5,504
Mexico	$ 2,553	$ 2,998	$ 3,791	$ 3,603	$ 4,513
Korea	$ 2,644	$ 2,104	$ 2,222	$ 1,932	$ 2,329
Taiwan	$ 1,661	$ 1,899	$ 1,900	$ 2,043	$ 2,145
Netherlands	$ 1,581	$ 1,698	$ 1,853	$ 1,702	$ 1,708
Hong Kong	$ 701	$ 771	$ 862	$ 875	$ 1,233
China	$ 814	$ 722	$ 544	$ 376	$ 1,080
Germany	$ 1,158	$ 1,076	$ 1,163	$ 1,071	$ 1,052
Former Soviet Union	$ 2,271	$ 2,508	$ 2,346	$ 1,757	$ 1,000

Source: Foreign Agricultural Service, U.S. Department of Agriculture

Fortunately, many Kentucky food processing firms happen to be in sub-industries that are experiencing rapid export growth. Figure 21.2 shows U.S. exports of selected food products which are representative of Kentucky food processors. Since 1990, exports have grown by 22 percent in the meat packing industry, 128 percent in the poultry industry, and 43 percent in the distilled spirits industry. Each of these industries have increased more rapidly than the 18 percent overall increase in processed food exports. Kentucky firms are benefiting through expanded markets and higher prices for their output.

Another factor, in addition to international trade, which is becoming increasingly important in the globalization of the U.S. food processing industry is the growth in foreign direct investment. Foreign direct investment occurs when a foreign company takes an equity interest in a firm operating outside its border. For example, when a U.S. food processor owns a facility (an affiliate) in Belgium, that facility's operation could have important ramifications on U.S. food exports. In 1993, sales from foreign operations of American food firms totaled $95.8 billion, over three times the value of American exports of processed foods. Foreign firms also own American facilities and the value of their sales totaled $45.8 billion in 1993—again, much more than U.S. processed food exports.

FIGURE 21.2
U.S. Exports of Selected Processed Foods, 1990-1994



Source: Economic Research Service, U.S. Department of Agriculture

It is well known that multinational

firms initially use exports as an entry strategy and if they are successful, they will often invest in processing facilities at a later date. Most of the foreign facilities owned by U.S. food firms are in Europe (accounting for 57 percent of sales in 1993) and those facilities sell most of their output in the country where their plant is located. The same is true for foreign-owned food processing firms in the United States, the vast majority of their output is sold here. Thus, foreign direct investment in food processing is an entry strategy to a market rather than a stage for exports to other countries, meaning that foreign production by U.S. food processors will hurt U.S. exports.

It is important to note that most firms which invest in overseas processing facilities are huge firms, and few Kentucky firms have processing facilities abroad. Yet, when Kentucky food processing firms decide to enter the export market, they will find themselves competing with the same firms they face here. The only difference will be that some of those competitors will have processing facilities within the country whereas the Kentucky firm may not.

Factors Driving Exports and Foreign Direct Investment (FDI)

One of the basic factors behind growth in U.S. agricultural exports is trade liberalization. Trade liberalization (reductions in tariffs, quotas, and other hindrances to trade) gives U.S. agricultural producers more access to markets and allows them to compete on an equal basis with domestic producers. Obviously, given the consistent volume of agricultural exports and recent sharp increases, U.S. agricultural producers have been successful in entering foreign markets. NAFTA and the recent GATT (General Agreement on Tariffs and Trade) agreement are important to continue expanding demand for U.S. food products overseas. Yet most of their impacts are not seen in recent trade figures. The GATT agreement was only recently signed, and the export growth to Mexico has slowed due to problems with the *peso* devaluation. However, these agreements will have important trade enhancing effects for U.S. agriculture in the future.

Despite all the trade liberalization that has taken place since the 1970s, income growth abroad is likely a more important reason for U.S. agricultural export and FDI growth. As seen in Figure 21.1, the growth in U.S. agricultural exports since 1981 has been concentrated in intermediate and processed food products—products with higher value added—rather than in bulk commodity exports. Further, the rapid growth in FDI by U.S. multinational food firms indicates that processed food markets are becoming increasingly important to U.S. food firms. Consumers throughout the world now have enough income to purchase higher valued food items. As this economic growth persists, these higher incomes will continue to play an important role in future U.S. food exports and outbound FDI.

Exchange rates have also played an important role in increasing U.S. agricultural exports since the fixed exchange rate regime was eliminated in the early 1970s. As the value of the dollar falls, U.S. agricultural exports become cheaper for foreign customers. In 1981, a $3 bushel of corn cost Japanese importers 660 yen, whereas the same $3 bushel of corn costs them only 360 today. The U.S. dollar has depreciated against most major currencies since 1985, providing a strong impetus for exports of price-sensitive agricultural products, such as grains and oilseeds.

What the Future Holds

The future for U.S. agricultural exports should be bright, with increases coming in most product categories. Yet there are some overriding trends that, while prominent in recent years, will become more important in the future. Most importantly, world markets for food will likely become less sensitive to price over time, but more sensitive to product differentiation. Consumers will demand products with particular attributes that meet their consumption needs. If U.S. (and Kentucky) agricultural producers and food processors can recognize those desired characteristics and incorporate them into their outputs, they will be more successful.

Many of these product characteristics will involve scientific developments that will improve product quality—making products safer, fresher, or more visually appealing. The scientific community will need to work closely with farmers and food processors to make sure that such technology is developed and rapidly adapted into foods. This will give our producers and processors advantages in the increasingly global competition.

Another important element in future competitiveness, especially for Kentucky, is that information must flow to producers so that they can produce the desired products and deliver them to lucrative markets. This is particularly important for Kentucky because farmers and processors tend to be smaller than their competitors throughout the United States. and they do not have great access to information on international markets. Thus, these Kentucky firms will have more obstacles to overcome than many of their competitors. However, given the increasing demand for product heterogeneity throughout the world, there will be increased opportunities for exportation by these smaller, more specialized firms.

Kentucky is well poised in two industries (distilled spirits and poultry processing) internationally, but will not likely become a large exporter in other areas, such as red meat packing and dairy. There may be potential for developing other food processors, but the state's producers are unlikely to be able to compete in fruits, vegetables, and other products on a large scale. The tobacco export market has much more growth potential than the domestic market. Yet the future for tobacco exports is very much dependent on smoking and health issues in foreign countries, the magnitude of price support changes, and trade liberalization in tobacco and cigarette markets. The future for other crops is relatively bright, though it depends on future U.S. agricultural policy and the development of the world livestock industry. For instance, the Freedom to Farm Act could have major impacts on the profitability of Kentucky grain production. The world livestock industry will undoubtedly continue to expand as incomes throughout the world rise and meat consumption rises along with it. This increased demand for meat will impact the U.S. in one of two ways: through increased U.S. livestock product exports (as we have seen in recent years) or through increased U.S. grain exports to feed the larger livestock inventory outside the United States. Either scenario will be a positive development for Kentucky grain producers.

There are important trends in Kentucky agriculture that are making it more internationally competitive. An important factor behind that trend is continuing trade liberalization throughout the world that gives U.S. and Kentucky producers more ready access to global markets. The diversification of Kentucky agricultural production is also improving competitiveness, especially with respect to the poultry industry. If the state can continue to diversify into other high valued agricultural production and food processing, the state's agricultural industry will be well positioned for the decades ahead. Yet even if agricultural producers do not diversify, they will likely see strong export markets for their main crop and livestock enterprises.

Kentucky's Transportation System: Current Trends and Future Issues

Several current and future trends promise to affect Kentucky's transportation system. These include: the increasing importance of nonmetro public transportation; the increasing dispersion of manufacturing and service industries; the interwoven relationship between the economy, the environment, and the transportation network; the expectation that government should do "more with less" and the challenges this presents for funding the transportation network; information technologies' impact on transportation's administration, planning, and operations; and safety.

By Ted Grossardt[*]
Kentucky Transportation Center

Transportation systems both guide and are guided by people's day-to-day lives. Decisions about where to live and how to connect one's activities are made within an already built environment. At the same time, these decisions affect future investment in that system. The transportation system of tomorrow is then based on the structures and habits of the past, and changed by the conscious decisions for the future. This chapter surveys the problems and opportunities for Kentucky's transportation system, and suggests how they can be managed.

Transportation Issues Likely to Face Kentucky in the Future

The increasing importance of nonmetro public transportation. Kentucky is a more rural state than the United States as a whole, with just under half of Kentuckians classified as nonmetropolitan in 1990. Like the rest of the country, though, Kentucky continues to suburbanize. These processes have important implications for the transportation system of the state. While projections by the Kentucky State Data Center at the University of Louisville indicate that Kentucky's population will shift toward the central part of the state and the major metropolitan centers, recent population trends (1990-95) show greater total population increases in nonmetro areas of Kentucky (Fig. 22.1).[1] This apparent paradox actually reflects the rapid pace of suburbanization, as most of this nonmetro growth is taking place adjacent to metro areas. At the same time, Kentucky metro areas are similar to other urban areas in the United States. The number of residents in each household is decreasing even as each household paradoxically contains a higher number of workers. The population is becoming more dispersed *and* more urbanized as the population shifts from rural and intercity areas to suburban and fringe metro regions.

Suburbanization has led to a commuter circulation pattern that is circumferential rather than city-centered.[2] With more, smaller households, the commuter pattern becomes increasingly multidirectional. This has several long-term effects. Specifically, more workers drive alone.

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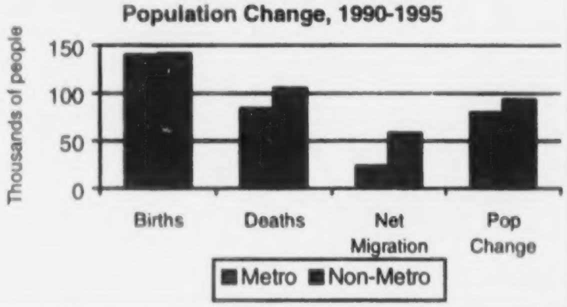
[*] The author wishes to thank Calvin Grayson, Don Hartman, Dan Sutch, Jerry Pigman, Scott Wadeson, Dr. Issam Harik, and reviewers from the Kentucky Transportation Cabinet for kindly contributing their time toward the production of this chapter. All errors, however, remain the author's.

[1] See M. Price, Migration in Kentucky: will the circle be unbroken? in this volume. Also, refer to Price, M., et al. (1995). *How many Kentuckians: population forecasts 1995-2020.* Louisville, KY: University of Louisville, Kentucky State Data Center.

[2] See Volpe National Transportation Systems Center. (1994). *Journey-to-work trends in the United States and its major metropolitan areas, 1960-1990.* Final Report. Washington, DC: U.S. Department of Transportation, Federal Highway Administration, Office of Highway Information Management. [On-line] Available: www.bts.gov/smart/cat/473.html.

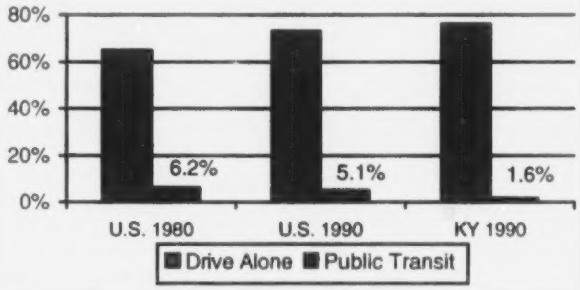
Indeed, this category of workers increased nationally from 65 percent to 73 percent during the 1980s, and reached 76 percent in Kentucky. City-centered public transportation systems serve a decreasing proportion of the population of the urban area. Nationally, between 1980 and 1990, public transit use dropped from 6.2 percent of all commuters to 5.1 percent. Kentucky's rate is 1.6 percent—less than one third of the U.S. level (Figure 22.2). Compounding the problem of underutilization of public transportation is the expectation that Kentucky will suffer a total loss of $2.2 million in federal transit operating funds in 1996.[3]

FIGURE 22.1
Components of Kentucky's Population Change, 1990-1995



Kentucky's rural public transit providers find much of their clientele supported by Medicaid and Medicare funds, and indirectly by the Social Security retirement system. Kentucky may well be looking forward to a population sorted by age and ruralness, with rural elderly residents contrasted with suburban and younger residents concentrated on a few corridors across the state. Population projections suggest a trend toward a higher proportion of older residents in Kentucky.[4] Already, the proportion of Kentucky's elderly living in rural areas (44 percent) is nearly twice that of the nation (25 percent), and is significantly isolated in many key ways. It is reasonable, then, to expect an increasing need for rural public transit. Unfortunately, federal support for rural transit in Kentucky will be reduced from $3.4 million to $2.7 million in the 1996 fiscal year alone. Necessary fare increases to offset these and other reductions in public transit support would range from 14 percent in metro areas of 500,000 to 1,000,000 up to 73 percent in areas under 200,000 population. Obviously, these are impractical alternatives, especially from the perspective of rural systems that must operate long distances over roads of variable quality. Clearly, rural areas are most adversely affected by these reductions.

FIGURE 22.2
Commuter Habits



The increasing dispersion of manufacturing and service industries. The same process of "dispersion" that the residential population exhibits is mirrored in the manufacturing and service industries which serve that population. Commercial locations that formerly were concentrated in the downtowns are now dispersing throughout the suburban milieu. Likewise, regional shifts in the industrial Midwest continue to disperse manufacturing across the Midwest and into the old South. Facilitating this shift is an increasingly sophisticated system of trucking and intermodal freight that lowers shipment costs and allows movement toward lower labor cost areas. Kentucky has accommodated the placement of new factories, as well as growing commercial transportation corridors connecting the South and the upper Midwest. The result has been a growing truck, rail freight, and intermodal freight network in Kentucky.

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[3] See Federal Transit Administration. (1996). *Transit in Kentucky: an analysis of FY 1996 transit funding cuts.* [On-line] Available: www.bts.gov/smart/sam/KY5.html.

[4] See G. Rowles and J.F. Watkins, Growing old in Kentucky: the approaching age of age, in this volume.

To remain economically competitive, Kentucky will need an effective transportation network for moving freight. While public sector authority and responsibility is focused on the roadways, all modes (i.e., road, rail, water, air) provide interlinked and complementary services. The public sector cannot afford to be concerned solely with one mode, as changing conditions in one mode will have repercussions for other modes. Nonetheless, Kentucky's freight system relies heavily on the truck.[5] As the first results of the 1993 National Commodity Flow Survey show, trucks continue to surpass all other modes combined in terms of value shipped.[6] In Kentucky, over 75 percent of all commodities (by value) move by truck. Also, the proliferation of just-in-time manufacturing systems has partially shifted the warehousing function of many manufacturers to the transportation system. As a result, the public sector is not only expected to provide adequate space for this inventory on the highway system, it is also expected to move that inventory in a timely manner. More than ever, congestion on the transportation network exacts an economic cost. In a practical sense, the public road system has become part of the manufacturing process.

In the future, the relationship between transportation and the environment promises to become more significant. Conventional wisdom normally dictates that growth in transportation and concerns over the environment are at odds. Professors Stephen J. Goetz and Richard C. Ready of the University of Kentucky explored this question in a 50-state study in 1993. Their findings indicated higher rates of economic growth in states which showed higher concern for environmental quality. In short, environmental quality need not be seen as the antithesis of economic growth.

Intelligent use of energy resources for transportation is critically important when seeking a balance between the two objectives of economic growth and environmental quality. Of all the energy used within Kentucky, roughly one third is used on transportation. The typical Kentuckian travels alone and drives 10,000 miles each year. All travel by Kentuckians consumed approximately 69 million barrels of petroleum during 1992 alone. This reflects a long-term increase in petroleum consumption of 176 percent since 1960. According to a 1994 study, 29 percent of Kentuckians (1.06 million) live in counties that have been designated as nonattainment areas for recommended levels of ozone. Carbon monoxide is a major cause of ozone depletion, and levels in Kentucky have been steadily decreasing since the 1970s, courtesy of newer, lower emission autos.

In order for Kentucky to remain a desirable place to live in the future, policymakers will be pressed to identify ways to make transportation more amenable to the already fragile environment. One way to accomplish this is by implementing ways to travel "smarter." An example is the Advanced Regional Traffic Interactive Management and Information System (ARTIMIS). This system is being built in the northern Kentucky/Cincinnati nonattainment air quality area. With ARTIMIS, travel time and congestion may be avoided by merely tuning a radio, observing electronic road signs, or by dialing a number on a cellular phone and listening to up-to-the-minute interstate traffic information.

Policymakers will be challenged to finance the transportation system as government is expected to "do more with less." New establishments have come to expect truck service virtually anywhere, but this expectation is unrealistic and places unusual demands on the Kentucky transportation system. Private capital has outrun the capacity of public finance to support its movements. Many local roads in Kentucky cannot accommodate 102-inch wide and 53- or even

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[5] Bureau of Transportation Statistics. (1996). *Freight transportation in Kentucky: selected data from federal sources.* Washington, DC: U.S. Department of Transportation.

[6] Bureau of the Census. (1996). *1992 census of transportation, communications, and utilities: 1993 commodity flow survey, Kentucky.* Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration. [On-line] Available: www.bts.gov/cfs/prod93.html.

57- foot long trailers, and the public resources do not always exist to make the upgrade investment.

Kentucky's initiatives to support local economic development with transportation infrastructure may require better coordinated planning. While economic development activities are considered *most* desirable in areas with the *least* current activity, such areas are likely to also be *least* prepared for heavy truck traffic, and so require the heaviest public sector investment. Strategies to address the need for development must also recognize the limitations of public sector resources. To date, well-planned industrial parks have been the best strategy for dealing with the problem and opportunity of economic development. They provide the complete complement of public sector utilities needed by industry, location along truck-capable highways, the potential to encourage railroad use as a supplement to truck traffic, and are an important, tangible expression of support for economic development by the local community.

Yet, while the expectations for a world-class transportation system have continued to rise, the method of paying for it has not kept pace. The current finance system is designed to use fuel and vehicle-based taxes to pay for anticipated maintenance and improvements on the highway system. Under current user fee arrangements, it appears the Road Fund plus Federal Fund will marginally be able to meet most of the requirements now incorporated into the Six-Year Plan plus half of the Long-Range Plan of the Transportation Cabinet. It is important to note, however, that state road funds are restricted by the Kentucky constitution to highway uses. Consequently the public sector is ill-equipped to fully exploit the potential of an integrated transportation system. The Intermodal Surface Transportation Efficiency Act (ISTEA) has encouraged the search for solutions to this long-standing problem. Good potential exists to relieve pressure on highways by assisting in the movement of traffic onto rail and water, but the public sector currently has few tools to facilitate that process.

While the expectations for a world-class transportation system have continued to rise, the method of paying for it has not kept pace.

One finance strategy compatible with current constitutional restrictions is *congestion pricing*. Congestion pricing encompasses a variety of strategies, including fee-permitted zones for certain vehicles at certain times of the day, or more sophisticated automated tracking and billing techniques based on Geographic Positioning Systems or ground-based monitoring techniques. Congestion is already paid for in wasted time and accidents. A responsible transportation management scheme would begin to explore ways to use a true pricing model to avoid congestion and use the savings to upgrade the transportation system appropriately.

Current and emerging transportation information technology will continue to affect transportation administration, planning, and operations support. Administrative systems are vital to maintain the effectiveness and efficiency of the regulatory agencies they support. Further, they provide much of the backbone upon which other systems can be integrated. Kentucky has a fairly robust network enabling access to key databases, communication via electronic mail, and file transfer. Additionally, the Kentucky State Government network is connected to the Internet, affording a much larger "information marketplace."[7] Nevertheless, there are a number of emerging technologies that can make this effort more effective.

Digital Orthophotography, for example, has the potential to provide detailed information to verify and correct the location and nature of transportation routes and land use locations, including such hard-to-verify sites as coal tipples.

Kentucky's Transportation Cabinet is continuing to support and expand its Highway Information System by linking it to a *Geographic Information System* (GIS) to facilitate spatial portrayal and analysis. A GIS is essentially a software tool which allows the spatial representation of data. That information may pertain to any sort of topic and be arranged regionally (as in land use); linearly, as in highway, rivers, roads, or railroads; or in sites, such as accidents, bridges, intersections, and buildings. A GIS is also useful in allowing the juxtaposition of data otherwise difficult to compare: potential road construction sites and wetland locations; traffic generators and high-accident-rate locations; highway rockfall locations and geomorphological structures; accessibility to bus routes or major transportation corridors; and demographic profiles. Such "overlays" provide insights that would be difficult or impossible to infer using any other means.

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[7] See D. Robinson, Information technology: perspectives and trends, in this volume.

Another technology, still in its infancy in Kentucky, is the use of *Global Positioning Systems* (GPS) to help locate places and events in Kentucky's growing Geographic Information System coverages. Because GPS has the ability to quickly and unambiguously locate an event, it can be used to locate events such as traffic accidents that now rely on written records which must be transcribed by hand. It can also be used in real time to track the location of commercial vehicles, traffic accidents, fires, and congestion problems that impact the operation of a transportation system.

Ultimately, the goal of transportation technology applications is to make transportation more efficient. In recent years a comprehensive national program of transportation technology development has been pursued under the rubric of *Intelligent Transportation Systems (ITS).* At the core of ITS is the realization that transportation safety and capacity problems cannot be solved solely by new construction. Using new technology to more effectively manage existing systems, however, offers many benefits with lower costs.

Kentucky is nationally recognized as an early leader in the development and deployment of numerous ITS projects. Most noteworthy is the Advantage I-75 Mainline Automated Clearance System which integrates weigh-in-motion (WIM) technologies, read-write electronic transponders, and high-speed networks to improve commercial vehicle operations on I-75. Further, this program—built around an expanding partnership of six states; Ontario, Canada; and industry representatives—demonstrates how public-private partnerships can be leveraged to deploy complex technology.

Public transportation technology applications have two broad goals: improved ability to express demand and stronger capabilities for managing service provision. This translates into software/hardware combinations that automate client location, bus routing, fare collection, fleet management, and bus location monitoring. As with other technologies, the more sophisticated versions of these rely on GIS/GPS combinations. While some urban transit systems have begun to explore these capabilities, they may have strong benefits for regionally extensive, rural, demand-based systems. Combined GIS/GPS systems can be used to track and schedule buses. The patrons can use "smart cards" to validate and pay for their rides, and the information from those cards can feed accounting and maintenance information systems to improve the manageability of rural transit systems. The role of rural transit systems may well expand with the devolution of welfare responsibilities to the states. Low-income people needing to reach their jobs may not have the resources to provide reliable transportation, and the state may find it strategically useful to provide transportation services that assist social service agencies. Information technologies for managing this new demand will become more important.

Safety issues will continue to confront policymakers in the future. Trends in the safe use of Kentucky's transportation system are best assessed through consideration of the influences of alcohol, age, and safety belts. In Kentucky, alcohol-related accidents cost about $101 million annually. Through increased enforcement efforts, Kentucky's alcohol-related accident rate has dropped steadily for the past five years. Lowering the BAC (Blood Alcohol Content) limits from .1 percent to .08 percent could continue to point this trend in the proper direction. The teenage accident rate continues to be three times the teenage license registration rate. Kentucky's graduated driver licensing law, one of the few of its kind in the country, limits the hours of driving and BAC for teens more severely than other drivers, but has not been in effect long enough to evaluate. Also, safety belt usage in Kentucky has increased dramatically from 4 percent of drivers in the early 1980s, to over 50 percent currently. There is room for improvement here, though, as North Carolina's more stringent enforcement standards for safety belts have produced a usage rate more than 20 percent higher than Kentucky's.

Conclusion

Transportation makes possible many of the transactions of everyday life. If people and shipments are expected to be on time, and the state is expected to facilitate this, then Kentucky may need to find creative ways to move people and goods. This includes current efforts to improve the efficiency of traffic across the network, but should also include exploration of ways to complement the capacity and efficiency of the system through load sharing with other modes. The current financing system will pay to maintain and continue the current transportation system, with the attendant problems listed in this chapter. A funding mechanism that requires unimodal construction moneys without explicit consideration of modal complements is not market driven, however. A reasonable strategy might include the use of new technologies to better manage access to the transportation system, and more intelligent planning to take advantage of the multimodal possibilities already existing.

There are several steps Kentucky's policymakers can take to ensure a robust transportation network well into the future:

- Provide a mechanism for the optimal use of public sector funds across *all modes of transportation*. Under ISTEA legislation, the federal government has already established a precedent for such flexibility.
- Pursue an expanded *Transportation Planning* curriculum in Kentucky's universities. The increased private and public sector investment in logistics and transportation management as an aspect of an effectively operating manufacturing or transit system is not being formally accommodated by current curriculums.
- Continue to expand participation in *regional management systems* based on regional economic processes, such as the Commercial Vehicle Information Systems and Networks projects currently being pursued by the Transportation Cabinet and the Kentucky Transportation Center.
- Support the incorporation of *intelligent transportation technologies* into transportation management as rapidly as possible. This will benefit nearly every existing mode, and may have particularly salutary effects on rural transit, where increasing demand can reasonably be expected.
- Plan now for strategies to address the *increasing need* for rural transit, including an aging population and increased state responsibilities for welfare reform.
- Broaden support for *functional coordination* of transportation and land uses. Planning ahead for industrial parks, schools, airports, and housing developments will help the state to use its scarce transportation resources to its best advantage.

Kentucky has become recognized as a regional transportation leader in the United States, and has recently been called on to demonstrate and lead important new regional projects in the adoption of ITS technologies for the surrounding states. Let us not forget to apply that hard won expertise at home.

Information Technology: Perspectives and Trends

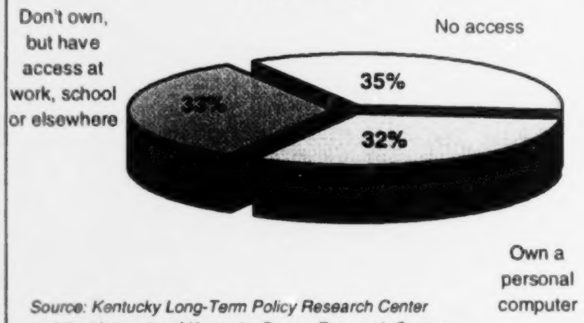
The full impact of the current information technology and networking revolution remains unknown. But the experiences of organizations and individuals who are "connected"—using the tools and resources offered by information technology—suggest that it may change our social fabric. Some of the current and emerging trends in information technology include: the need to provide equitable access; timely solutions to the "Year 2000" problem; and the transformation of organizations. Government will be challenged by many public policy issues related to information technology, which include, but are not limited to: electronic records management; privacy; security; network literacy; organizational change; intellectual property rights; information access, storage, and retrieval; and public-private partnerships. By developing innovative solutions and responses to these trends, we can better position Kentucky for a prosperous future.

By Doug Robinson
Kentucky Information Resources Management Commission

Information technology (IT) continues to have a major influence on the lives of Kentuckians[1] even though it remains seemingly transparent to most citizens. People have accepted the convenience of an information infrastructure that offers automated teller machines, telephone voice response, on-line transactions and point-of-sale registers at the checkout line. High-speed networks traverse the state and nation connecting retail stores to devices that automatically record purchases, transmit inventory data to suppliers, and keep the products we want on the shelves. While dramatic advances in computing and communications continue at a pace that nearly defies comprehension, it is evident that IT will continue to improve the quality of life in Kentucky, and, simultaneously, create challenging public policy issues.

The convergence of the computing and communications infrastructure has opened and continues to open new possibilities for access to information and delivery of services. The advancement of this information infrastructure makes Kentucky more competitive by providing critical support for education, health care, commerce, and government. Indeed, the information revolution is being experienced within many Kentucky households. According to a recent survey, about one third of Kentucky households own a personal computer, which is very close to the national average.[2] In total, approximately two thirds of Kentucky adults have access to a personal computer at home, work, or school (Figure 23.1), and about one in five Kentucky adults has accessed the Internet.[3]

FIGURE 23.1
Access to a Personal Computer in Kentucky



Source: Kentucky Long-Term Policy Research Center and the University of Kentucky Survey Research Center.

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[1] In this chapter, information technology is defined broadly: computer hardware, software, communication networks, data, services, maintenance, and trained people to maximize its use. Likewise, the view of the "information infrastructure" is extended beyond just the physical network of copper and fiber lines to include end-user devices like personal computers (PCs), the data or content delivered over the infrastructure, and the trained people necessary to effectively use the network.

[2] Schirmer, P. (1996). Computer and Internet use in the Commonwealth. *Foresight, 3*, pp. 7-9.

Schools, however, are seen as the great equalizer in the technologically enabled society. Until every home is "wired," the school can provide access to the benefits associated with the evolving electronic age. The connection of schools to the "ubiquitous" networks enables retrieval of an exponential body of resources—virtual libraries. Moreover, all types of curricula are available, regardless of student/classroom locations, both in subject matter as well as educational medium (e.g., multimedia, simulation). Similarly, the use of network discovery tools serves to equalize the exposure of students to a wide range of resources and events that many would not otherwise be able to experience, such as "virtual" museums that can be accessed through multimedia systems. The advantages for teachers and for curriculum development are realized through the ability to access information resources from classrooms and to communicate with other educators and resources throughout the nation and the world (via the Internet/National Information Highway).

The overarching question is whether appropriate investments in and use of information technology will lead to prosperity for Kentuckians.

The use of IT also permits increased parental involvement through the ability to monitor a student's progress on a day-to-day basis via electronic postings of homework, timely messages from and interactions with teachers, etc. Increased administrative efficiencies for teachers and administrators will also be realized through enhanced computing and networking applications in support of administrative needs, such as attendance, financial reporting, and e-mail.

In addition to its profound influence on education, the technological revolution is transforming organizations, public and private. Information technology has evolved as an agent of change that enables timely responses to social and economic trends in a global information-based economy. Marketplace dynamics and a diverse, mobile and aging population require new approaches to the way we select and deploy technology. Additionally, consumer and citizen demands for choice, convenience, and ease of use in the delivery of goods and services must be achieved in an era of organizational downsizing and strained budgets. At the same time, deregulation and telecommunications reform promise to turn our view of the "telephone company" upside down.

While information technology holds the promise of meeting many challenges in the years ahead, it is not a silver bullet. Several current and emerging information technology trends receive a more detailed examination in the next section.

Current and Emerging Trends In Information Technology

No one knows the full impact of the current information technology and networking revolution, but the experiences of organizations and individuals who are already "connected"—using the tools and resources offered by technology and communications—suggest that it is likely to produce fundamental change in our social fabric. These changes may not all be positive if basic access and public policy issues are not addressed and resolved. The overarching question is whether appropriate investments in and use of information technology will lead to greater prosperity for Kentuckians.

There is and will be a need to provide access to the "information network." The provision of a ubiquitous information network is the most consequential change envisioned for the future of Kentucky. Such a network would enable timely access to global information highways and resources by any and all Kentucky businesses, governmental entities, citizens and students. Advanced statewide networking to support the operations of Kentucky state government and others is now a reality. The Kentucky Information Highway (KIH) is a statewide, integrated communications and information network. First brought on-line in 1995, this major state initiative puts

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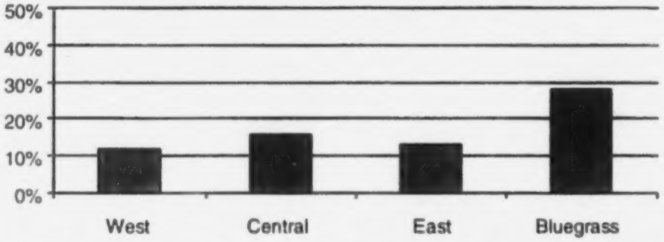
[3] Schirmer. Survey results suggest that 20 percent of Kentuckians have accessed the Internet. This compares favorably with the U.S. average of 19 percent.

Kentucky at the forefront in terms of telecommunications infrastructure and breaks many of the barriers traditionally imposed by geography, demographics and economics. This network, with an "access ramp" in each of Kentucky's 120 counties, offers tremendous advantages for communities and citizens in government services, education, health care, economic development, public safety and access to information resources.

This statewide digital network provides for the high speed, high capacity delivery of voice, data and video transmissions. It incorporates existing communications systems used by the state with advanced capabilities and expanded services. With state government as the catalyst and anchor tenant on this new information network, all Kentuckians ultimately benefit from the accelerated deployment of technology and services throughout the state. Because of the state's substantial purchasing power, lower per-unit costs for voice and data communications are available, making statewide long-distance calling and computer connections less costly. In addition to handling all of state government's communications, the KIH is available to cities, counties, schools, libraries and others across the state at the contract rate for voice and data services. This not only directly assists these groups, but also stimulates the expansion of private Internet service providers, with local Internet access now available in almost every Kentucky county.

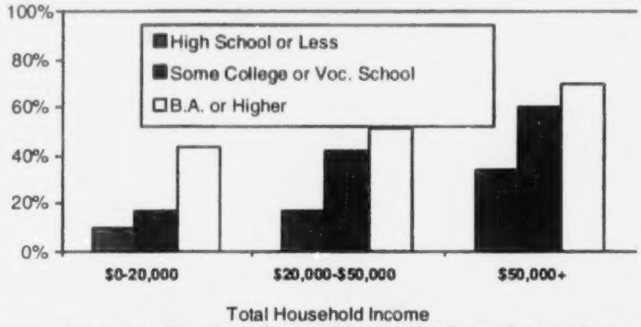
FIGURE 23.2
Percent of Adults Who Have Accessed the Internet in the Past 12 Months, by Region



Source: Kentucky Long-Term Policy Research Center and UK Survey Research Center

Today, rural parts of the Commonwealth have equal access to the network and all the advanced technology services available through it. In addition to directly serving state agencies, the network offers tremendous opportunity for applications in the fields of education and health, as well as enabling the development of our economy. In fact, via the KIH, Kentucky was the first state to connect all of its school districts to the Internet. The KIH enhances the Commonwealth's ability to deliver vital public services and provide greater access to all Kentuckians.

FIGURE 23.3
Percent of Households with a PC by Income and Education of Respondent



Source: Kentucky Long-Term Policy Research Center and UK Survey Research Center

Providing equitable access is a fundamental and sustaining necessity for equalizing opportunities in both the public and private sectors, especially for those entities located in an isolated or limited environment. The issue of equity involves providing access to other organizations, citizens and groups via the network, as well as access to information. Recent survey information from the Kentucky Long-Term Policy Research Center and the University of Kentucky Survey Research Center shows that access is affected by income, education, and the region in which people live (See Figures 23.2 and 23.3).[4] Access must be enabled and secured in support of education, whether in urban, suburban or rural areas, or in rich or poor neighborhoods. Points or methods of access or intelligent devices must be provided to those without personal computers to prevent limitations of access due to economic status.

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[4] These figures are from Schirmer.

The date change to the next century will cause major difficulties in the world of computing devices. This issue, dubbed the "Year 2000" problem, represents the greatest threat to computers since the chip was invented. Since the early years of data processing, computer programmers stored the year in two digits in order to reduce software code and save costly disk storage. If the computer system or its software applications use two digits to represent the year, the change from 1999 to 2000 and beyond may disrupt applications and skew the accuracy of calculations. Any business, government, school or organization that uses a computer will be affected by this problem, which affects many of the processes we depend on every day, including payrolls, invoices, inventory systems, payment calculations and credit card transactions. Applications that manage expiration dates, policy renewals, and financial projections are candidates for failure *now* because they use future timetables. This problem not only affects information technology software, but also devices that use chip technology in manufacturing, retail operations and production processes.

The price tag to fix the problem is significant, primarily because of the magnitude of the situation and its labor-intensive nature. The Gartner Group, an IT consulting firm, estimates the worldwide cost for fixing the Year 2000 problem at $600 billion. The estimated cost for correcting this problem in state government agencies alone is more than $10 million. Many organizations have not addressed the Year 2000 problem because it is so daunting and time consuming. It may take months to analyze, change and test millions of lines of software code that support their activities. What's more, this massive undertaking must be accomplished while normal business activities are ongoing. All existing computers must be tested and new hardware and software procurements must be made that are Year 2000 compliant. If unaddressed, the economic impact could be enormous as public sector agencies are unable to serve citizens and businesses remain noncompetitive as they struggle to correct the problem in late 1999.

Information technology will transform the operations of businesses. The internal culture of organizations will change as a consequence of the proliferation of computing and networking. Flatter organizational structures will be supported by the diffusion of and access to information technology by any and all involved employees. Decentralized decisionmaking will be further enhanced as information and knowledge are made readily available throughout organizations.

Structurally, information technology will permit the evolution of the "virtual office" through employment alternatives such as telecommuting (working from home or remote locations), which will change the dynamics of the work environment, as well as workforce characteristics. The expanding information infrastructure will also allow "information intensive" firms to locate in rural or remote areas. Liberated from the constraints of time and geography, firms will be able to conduct business with customers and vendors. Quality-of-life concerns have driven many corporations and individual entrepreneurs to seek small town and rural locations with the requisite infrastructure to support their operations. Over the long term, this trend could certainly benefit Kentucky as businesses seek locations with the unique qualities of the Commonwealth. Such trends have prompted state, local and community groups to attract industry by providing ready access to telecommunications. Examples include the Kentucky Science and Technology Council's rural televillage initiatives in Pikeville and Elizabethtown.

> *The workplace in the near future may not appear vastly different from today, but behind the scenes information technology will be a major force in changing the way organizations do business and where they do business.*

The workplace in the near future may not appear vastly different from today, but behind the scenes, information technology will be a major force that will alter the way organizations do business and where they do business. The workforce will be comprised of more knowledge workers whose jobs will encompass extracting valuable information from internal and external resources—making sense of "what's out there" and utilizing it to benefit the organization. Outpacing IT's initial objective of processing data faster is the real value enhancement provided by IT to organize, manage, and link information sources and users. Increasingly, these links will embrace outside organizations that have traditionally been disconnected. In turn, metadata issues (information about information) will become a central concern as firms seek to extract meaning from the large repositories of information resources.

Electronic commerce (EC), which integrates communications, data management and security to allow organizations to transact business and exchange information electronically, will also become mainstream. EC differs from traditional commerce primarily in the way information is exchanged and processed, offering significant benefits due to its efficient capture and processing of standard business transactions. A core technology for EC is Electronic Data Interchange (EDI), a secure computer-to-computer transfer of trading partner data within an accepted set of standards. Another technology for EC is electronic funds transfer (EFT), which offers significant efficiencies and enhanced revenues through the immediate, electronic transfer of funds via a bank clearinghouse network. EC may also be represented by other technologies, including interactive telephone response, fax processing, electronic forms and bar coding.

Over the next decade, public and private organizations will move rapidly toward electronic commerce to support quick responses to changing customer service needs. EDI is a critical component used to integrate many facets of the electronic commerce trend and involves the use of software, data transport networks and professional services to allow organizations to share needed information. EDI is now mainly operational in the banking, retail, insurance, automotive, government and health care industries, where it enables immediate access and transactions based on core data elements. The results are such benefits as lower inventory costs, fewer out-of-stock items, and lower transportation costs. Many firms now view electronic commerce as a competitive necessity.

Public Policy Issues

Although the private sector will provide many of the networks, devices, services and training that comprise the information infrastructure, government participation and resolution of public policy issues is vital. As is often the case, technology and the ability to utilize it has eclipsed fundamental policies and procedures available to address concerns over use and misuse, access, security, management and costs. Without a proactive and articulated set of guidelines, the best interests of government and the people of Kentucky are not well protected. Private industry will most certainly build and manage statewide networks, provide the information tools, and develop many of the applications that use the networks. Public agencies will be responsible for most of the content, information resources management and service delivery concerns. In the ever more complex, technological and bureaucratic information environment of the next decade, the issue of access, digital records, security, privacy and electronic government will require far more attention from policymakers. Several of the more prominent issues are:

Electronic Records Management. As more and more public records are created, stored and manipulated in an electronic format, public agencies must address the realities of network access and the necessity for electronic dissemination. Citizens and organizations will not only request but demand open records in an electronic format. Public agencies should assume a proactive stance and make records available in a format that can be easily transmitted under accepted protocols and that will be available through easy-to-use, low cost services. Also, appropriate archival methods need to be enacted to preserve the intended useful life of electronic "public records."

Privacy. Privacy is an important issue that will become critical as more application areas involving sensitive information about individuals and organizations are collected and stored electronically by state agencies. Such information includes records of health care, tax returns, government services, driver's licenses, education and personnel data. The ways in which private companies use or misuse personal data receives constant attention. While privacy concerns are easily appreciated, other less apparent areas are affected as well. For example, while library patrons increasingly accept materials in digital form accessed over networks, such acceptance is still far from universal. Some are concerned that the use of electronic technology provides an easy way to monitor what people are reading, researching or "doing." Recently, the monitoring of electronic mail has become an issue for employer-employee relations.

Security. Information security—which includes confidentiality, information integrity, and information authenticity—is an important issue in all of the applications areas considered. Malicious pranksters and criminals skilled in computer use pose many potential threats to the security of internetworked systems. This issue of security from invasions by these parties is vitally important in several areas: (1) ensuring that medical records are not stolen or modified via network resources, (2) delivering benefits to the needy via electronic benefits transfer, and (3) in the electronic commerce, manufacturing, and telecommuting areas, securing and protecting proprietary information and transactions. Network security also must be planned and managed as networks proliferate to prevent sabotage such as computer pranks, virus corruption, or the elimination of a system's operational capabilities.

Network Literacy and User Training. User training—learning how to use the new technologies and applications—will require new approaches in the workplace, the classroom, and the home. Understanding the education and training requirements of advanced information technology applications is a challenge in itself. Increased videoconferencing and distance learning applications through two-way interactive video serve to illustrate the awareness building and training needed to routinely operate and use this technology. In support of the expanding computing and communications infrastructure, government will need to provide resources for both basic and applied IT research, as well as financial assistance for IT education and training. Issues related to user acceptance trends affect this development of "computing literacy," particularly in areas that extend computer-based information services to new groups of users who have been noticeably "computer-skeptical" in the past (e.g., shop floor workers, doctors and the elderly).

Organizational Change Management. Organizational learning closely parallels user acceptance and training. Many applications in the future will involve the development of new ways of doing the job and will require reengineering a business and its mission. New ways of functioning that are distinctly different from current practices will be required to achieve the greatest benefits from high-speed networking applications in many areas. This learning will not always be easy to achieve, and it will require several adjustments: organizational change; new roles and missions for many employees; and retraining. In some cases, professionals with career skills developed over a lifetime will be required to make a transition to the workplace of the future.

Intellectual Property Rights. Intellectual property rights is an important issue in those areas where government and individual intellectual creations (software, images, books) are accessible—and subject to copying—by many people, either directly or via high-speed networks. Libraries are the most obvious areas where this is a concern, but other application areas such as education and government services also are involved. Determining whether a public agency should copyright software created for public business is problematic and fraught with uncertainties. Presently unresolved issues related to how agencies are to be compensated for their work while still providing for public "fair use" under the proper circumstances will be a key determinant of the quality and availability of government information.

Information Access, Storage & Retrieval. Flexible and timely access to all of the information resources contained across the marketplace of networks—the knowledge of what information is available, where it is, and how to get it in a timely fashion and in a useful form—is important. Such access requires that the information not only be available, but also maintained and kept current. Access to timely, useful information is especially important in applications areas such as geographic information systems, libraries, manufacturing, and environmental monitoring, where large quantities of data must be sorted, stored, retrieved, and managed. The issues related to the operation of "information locator" services present additional management complexities and resource requirements.

Public-Private Partnerships. As the development of secure IT infrastructure necessitates large expenditures and commitments, public policies must address the right mix of public and private sector participation. Partnerships must be obtained to protect the investment of both sectors. Additionally, appropriate incentives for the private sector must be offered to sustain competition and investment in IT research and development. Similarly, perspectives and approaches must be endorsed by both sectors to sustain a progressive IT environment that will permit a satisfactory technology transfer process. Effective IT management involves maintaining innovative and responsive policies to allow the maximum benefits from timely deployment of rapidly changing technologies.

Conclusion

Information technology will be an agent of change in the 21st century, one that will continue to compel attention to the development and maintenance of critical infrastructure—a basic building block for the future of Kentucky. With the appropriate infrastructure in place, organizations, especially in the public sector, can effectively use information technology to promote, refine, and speed services to the public. In order to do so, new skills and resources, as well as the management of inevitable organizational change, will be required to capture full use of the immense potential of information and communications technology.

Significantly, information technology enables innovation, creativity and competitive advantage that can enhance performance in both the public and the private sectors. Consequently, the ability to effectively use and manage IT is not only a challenge for all sectors of the Commonwealth, it is an economic imperative. However, given its inherent complexity and its cost, strong partnerships between the public and private sectors will be necessary to bring the full benefits of IT to all sectors. Over the long term, the strategic application and management of IT can help Kentucky maximize the use of limited resources to meet its pressing needs, achieve a stronger competitive position in the global economy, meet the increasing demand for customer service, increase confidence in government, and approach solutions differently in such areas as education reform, employee development and empowerment, flexible manufacturing, and industrial revitalization. IT is, in effect, a tool for change that can enable the Commonwealth to realize more of its tremendous potential in the new millennium.

Section IV

Environmental Trends and Futures

Conventional wisdom long held that governments which take a strong stand on issues of environmental protection run the risk of inhibiting development and income growth. This assumption still surfaces as the basis for political action in spite of the strong environmental commitment a significant majority of citizens consistently express. It rests on the premise that strict environmental standards exact a cost borne by enterprises and, in turn, by their employees, their families, and their communities. But research increasingly refutes conventional wisdom. Indeed, a clear correlation between strong regulatory environments and income growth has been found at the state level in a number of studies, findings which recommend a new paradigm for economic development, one that systematically supports and advances environmental quality. Such a paradigm underscores the importance of the work presented here, that of tracking our environmental progress and anticipating the stresses that could adversely affect environmental health and, in turn, our economic vitality in the years to come.

The good news is that environmental quality is steadily improving in Kentucky. As Leslie Cole details in *Kentucky's Environment,* we continue to show signs of recovery and the restoration of environmental health, largely due to regulatory requirements imposed on municipalities, businesses, and industries over the past two decades. These rules, along with billions of dollars in private and public sector investments, have resulted in cleaner air, water, and landscapes across the state. At the same time, our economy has continued to expand. But much more remains to be done to ensure a safe and healthy environment for future generations of Kentuckians, one that will enable, rather than inhibit, prosperity.

In *Kentucky's Economic Trends and Environmental Futures*, Peter Meyer further illustrates the inextricable link between Kentucky's economy and its environment. As Dr. Meyer's projections show, the economic development policies we adopt today will affect the quality of our environmental assets tomorrow. Forward-looking legislation and policy are dependent upon information about the effects of different mixes of the pursuit of economic development and the promotion of environmental protection in Kentucky. Because the choices before us involve tough decisions, policymakers must be provided with adequate information about projected outcomes of the choices they confront.

Indeed, as Kentucky's economy grows, measuring environmental quality will become increasingly important to our efforts to ensure its protection. The problem is not one of tradeoffs between the environment and the economy, but rather the development of policies and programs and private sector practices that will protect the environment in order to *permit* more economic development. As Dr. Meyer illustrates, inattention to environmental issues will almost certainly adversely affect our development options.

As we noted in our first biennial trends report, *The Context of Change*, the systematic collection, management, evaluation, and reporting of data that enables effective long-range environmental planning is critical. With such information, policymakers, regulators, and the regulated community can more effectively target investments, creating a positive ripple effect throughout our economy—lower taxes for citizens and more public and private resources for investment in future growth. In short, knowledge is key to our ability to achieve environmental health and preserve the immense beauty of this state, assets which are irreplaceable and essential to the goal of sustainable development.

Kentucky's Environmental Trends: Progress and Problems

While environmental quality is improving in Kentucky, much remains to be done. For example, toxic spills have increased; more than half of the state's drinking water was in violation of one or more safe drinking water standards in 1995; and our forests and other natural resources remain at risk from unrestricted development, neglect, and pollution. On the bright side, 56 waste sites have been closed and 24 state-of-the-art facilities are operating in Kentucky today; statewide participation in garbage programs is at 80 percent compliance; and we are well within sight of reaching our recycling goal of 100 million tons per year. Moreover, air pollutants in Kentucky have been declining since monitoring began in 1980. Today, we are well below the national standards for public health safety. As Kentucky's economy grows, measuring environmental quality will become increasingly important to our efforts to ensure a viable and sustainable environmental future.

By Leslie Cole
Environmental Quality Commission

Kentuckians place a high value on a clean environment. Poll after poll reveals that the environment remains a top public concern. For example, a 1994 public opinion survey, conducted by the University of Kentucky found that more than half of the respondents supported a healthy environment at the expense of economic development.[1] A 1996 University of Kentucky poll also found that Kentuckians want the state to spend at least 50 times more on environmental programs.[2] The poll further revealed that the environment ranks behind only education and health care among the priorities Kentuckians would set for state spending. Currently, less than 1 percent of the state budget is allocated to environmental programs.

National opinion surveys echo similar sentiments. A 1995 poll, commissioned by the Coalition of American's Children, found that 93 percent of Americans support setting federal environmental standards at levels strong enough to protect children's health.[3] Many of those polled valued children's health more than reducing government spending and would be willing to bear the regulatory costs of protecting children if they were passed down to consumers. A September 13, 1996, survey, conducted by Princeton Survey Research for Knight-Ridder Washington Bureau, also indicated that 45 percent of Americans considered the environment among the most important problems facing the country.[4]

Public opinion about the environment has long guided government response. Public concerns led to the enactment of numerous federal environmental laws in the 1970s, 1980s, and 1990s. And these laws have been responsible for the significant progress made in restoring the environment.

For example, the Clean Air Act of 1980 has resulted in concentrations of many air pollutants in Kentucky declining to their lowest levels since monitoring began more than two decades ago. Further, a 25 percent reduction in the amount of toxic chemicals reported released to the environment by Kentucky industries since 1988 has been attributed to the 1986 federal Right-To-Know Law. And federal and state solid waste rules passed in the 1990s have resulted in the closure of 56 substandard landfills in the state and the permitting of 24 state-of-the-art municipal solid waste landfills in the past four years.

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[1] University of Kentucky Survey Research Center. (1995, November). *Annual Kentucky survey*. Lexington, KY: Author.

[2] University of Kentucky Survey Research Center. (1996, November). *Kentucky budget choices and environmental values*. Lexington, KY: Author.

[3] Poll: 93% say environmental standards should protect children. (1995, September 25). *Greenwire*. *5*, 3.

[4] Knight-Ridder Washington Bureau (1996, September). Poll by Princeton Survey Research of 1,002 registered voters.

But problems still remain. Drinking water quality, particularly for thousands of Kentuckians who depend on private wells and small drinking water systems for supplies, is marginal at best. Kentucky's drinking and wastewater infrastructure will require billions of dollars in investments to upgrade and improve operations. Contaminated runoff from cities, abandoned mine lands, and farms, along with discharges of improperly treated sewage, continues to make many waterways unfit for swimming, fishing, and other uses. Environmental degradation threatens the health and economic well-being of small rural communities as well as inner city neighborhoods located near contaminated waste sites and pollution sources. And our forests and other natural resources remain at risk from unrestricted development, neglect, and pollution. Little data are available to document how much timber is being removed from Kentucky's forests, but many suspect that logging has increased considerably in the past few years due to demand and rising stumpage prices.

But many of the federal laws and programs which brought about the benefits of cleaner air, water, and land are now under attack as too costly and inflexible—unable to address the current environmental needs and issues of the day. Regulatory reform is a common theme heard from the White House and the halls of the U.S. Congress to the offices of the Kentucky General Assembly. The President's Council of Economic Advisors in its *1996 Annual Economic Report to Congress* included, for the first time, a chapter on environmental regulations. The report details various options to reinvent environmental regulations based on the notion that changes in our economy, knowledge, technology, and society call for changes in regulatory policies.[5] In the 1995 publication *Setting Priorities, Getting Results, A New Direction for the Environmental Protection Agency*, the National Academy of Public Administration calls for "A system that would rely more heavily, though not exclusively, on the ability of individuals, firms, communities, and states to meet national environmental standards in a way that makes the most sense to them."[6]

While meeting environmental standards set to protect public health and the environment will remain the heart of environmental programs, Kentucky and other states will be given more flexibility in designing their own approaches to achieving environmental quality. State efforts to reinvent environmental regulation are taking on a variety of forms ranging from targeting areas of greatest need, integrating risk-based decisionmaking, reengineering permits, developing incentive and customer-based initiatives, and shifting from prescribed methods of regulatory compliance to specifying desired outcomes.

But is Kentucky ready to take on the responsibility of designing its environmental future? There are arguments on both sides. Environmentalists argue that environmental policy will be driven by economic interests rather than need and public accountability will be lost. The regulated community counters that it is in their best interest to meet or exceed environmental standards, particularly if they can use their own cost-effective strategies.

As Kentucky moves into the 21st century, one thing is certain for the environment and that is change. Change in the way we view and understand environmental problems. Change in the policies and tools used to address them. And change in the government's role in achieving a desirable and sustainable environmental and economic future. What is crucial is that Kentuckians have an active part in designing that future.

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[5] Council of Economic Advisors. (1996, February). *Economic report of the president*. Washington, DC: Office of the President.

[6] National Academy of Public Administration. (1995, April). *Setting priorities, getting results: A new direction for EPA*. Washington, DC: Author.

Environmental Trends: Progress and Problems

Kentucky's environment continues to show signs of recovery largely due to numerous regulatory requirements imposed on municipalities, businesses, and industries during the past two decades. These rules, along with billions of dollars in private and public sector investments, have led to cleaner air, water, and landscapes across the state while our economy has grown and prospered—a strong indicator of the complementary role a healthy environment plays in a strong economy. But much more remains to be done to ensure a safe and healthy environment for future generations of Kentuckians.

Air Quality

Data collected in 1995 from the state's 113 air quality monitors in 34 counties reveal that the average concentrations of many pollutants in the air were at their lowest levels recorded since monitoring began in Kentucky two decades ago. For example, concentrations of carbon monoxide (CO), an air pollutant formed when the carbon in fuels from cars and other sources is not burned completely, fell 42 percent in the state during the past two decades. Average CO levels during 1995 were well below the standards set to protect public health. The improvements are primarily due to pollution controls on automobiles.

Another success story is sulfur dioxide (SO_2). SO_2 is formed when fossil fuel containing sulfur, such as coal, is burned. Power plants are responsible for 90 percent of the sulfur dioxide emissions in the state. Between 1980 and 1995, the average concentrations of SO_2 in the air declined 29 percent. These improvements are attributed to the federal Clean Air Act Amendments of 1990 which required 10 of the state's 21 power plants to reduce SO_2 emissions 30 percent to 40 percent below 1980 levels by the year 2000 to address the threat of acid rain. The installation of pollution control equipment, such as scrubbers, at many power plants in Kentucky reduced SO_2 emissions 40 percent between 1980 and 1995. Measures to reduce sulfur dioxide emissions have also likely led to improvements in the pH of Kentucky's rainfall. Since 1985, rainfall at monitored sites in four Kentucky counties has become generally less acidic.

Nitrogen dioxide (NO_2) belongs to a family of highly reactive gases called nitrogen oxides (NO_x)—a brownish gas produced by fossil fuel combustion from sources such as cars and power plants. This pollutant can irritate the lungs and lead to respiratory infections. NO_2 is also associated with atmospheric reactions that produce ozone and acid rain. While all Kentucky regions currently meet the health-based standard for NO_2, Kentucky ranks 11th in the nation in NO_x emissions. Large sources of NO_x, such as power plants, will be required to reduce emissions by 30 percent to 40 percent by the year 2000. In Kentucky, NO_x emissions from power plants increased 14 percent between 1980 and 1995. The lack of emission reductions are attributed to the hesitancy of industry to invest in controls until federal regulatory uncertainties are resolved.

Levels of small particles in the air are declining in Kentucky. Particles of dust, dirt, and soot are emitted by many sources including cars, agriculture operations, and construction projects. These particles can be inhaled into the lungs and damage tissue and lead to premature death. All regions of the state currently meet the particulate standard of 10 micrometers or less, known as PM-10. However, the U.S. EPA is considering a new more stringent standard which would limit fine particles of 2.5 micrometers or less.

A more protective ozone standard is also under consideration by the U.S. EPA. Of the six principal air pollutants, ground-level ozone has been the most difficult to control. Kentucky was among 35 states that exceeded the ozone standard during 1995.[7] Ozone is produced when emissions of volatile organic compounds (VOCs), such as solvents and automobile exhaust, and nitrogen oxides (a byproduct of combustion) react with sunlight and heat to form smog. According to a 1995 American Lung Association survey, 432,516 people in Kentucky, or 11 percent of the state's population, suffer from lung cancer or chronic respiratory diseases that can be complicated by exposure to ozone and other air pollutants.[8] Ozone pollution not only affects people with impaired respiratory systems, but healthy adults and children as well.

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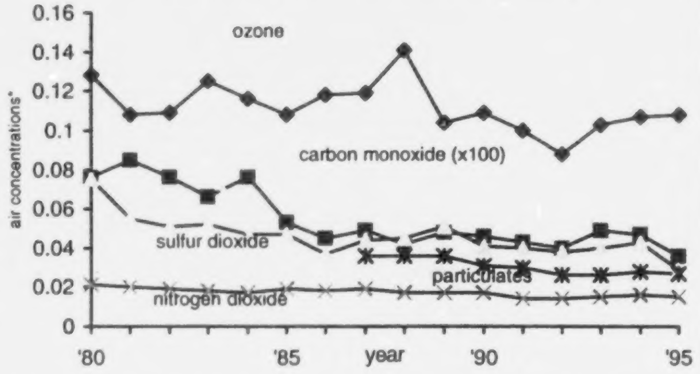
[7] U.S. Environmental Protection Agency (USEPA). (1995, December). *Comparison of preliminary 1995 ozone concentrations to 1993 and 1994*. Washington, DC: Author.

There are numerous small and large sources contributing to ozone pollution including automobiles, manufacturing plants, coal-fired power plants, and gas stations. While most regions of the state currently meet the national ozone standard, it is still considered a problem in the urban airsheds of northern Kentucky/Cincinnati (which includes Boone, Campbell, and Kenton counties) and the Jefferson County/Southern Indiana region (which includes Jefferson and portions of Bullitt and Oldham counties). Efforts to address ozone pollution in these areas are ongoing, however, both the Louisville and northern Kentucky regions exceeded the standard during 1995.

FIGURE 24.1
Air Concentrations of Pollutants In Kentucky



**Yearly air concentrations from state monitored sites based on the following: Ozone-second maximum one-hour average. CO-second maximum eight-hour average. NO_x and particulates (PN-10)-annual statewide averages. SO_2-second maximum, 24-hour average. Concentrations in parts per million for all pollutants except particulates, which are measured in micrograms per cubic meter. Source: KY Division for Air Quality.*

Other air pollutants receiving increased attention are toxic chemicals known or suspected of causing cancer or other serious health effects, such as birth defects or reproductive problems. During 1994, the most recent year for which data are available, 424 industries in Kentucky reported releasing 36.2 million pounds of toxic chemicals to the environment, 97 percent of which was to the air.[9] But data also reveal that releases of 17 toxic chemicals to the air prioritized by the U.S. EPA for reduction because they are considered highly toxic, carcinogenic, or released in large volumes, have declined 35 percent in Kentucky since 1988, representing important progress in reducing human exposure to toxic air pollution. The 1990 Clean Air Act Amendments will focus additional attention on reducing toxic air emissions and require technology-based standards on major emitters of 189 toxic air pollutants by the year 2000.

The release of certain chemicals such as carbon dioxide and chloroflurocarbons are also believed to be affecting global temperatures. A 1996 Kentucky study found that an estimated 205 million pounds of these greenhouse gases were released to the state's atmosphere during 1990, primarily by power plants and from the use of chemical refrigerants.[10] Although scientific uncertainties remain concerning the potential effects of greenhouse gases on global climates, policymakers at the international level enacted a treaty in 1992 to stabilize greenhouse gas emissions at 1990 levels by the year 2000.

The loss of the protective ozone layer in also believed to be contributing to global warming by allowing more of the sun's rays to pass through the earth's atmosphere. The ozone layer, which surrounds the earth and shields out ultraviolet radiation, is being destroyed twice as fast as thought. Excessive exposure to UV-B radiation can cause skin cancer and damage crops and livestock. In 1994, Kentucky industries reported releasing 5.6 million pounds of ozone depleting chemicals, ranking the state second in the nation in emissions of chemicals associated with ozone depletion.[11] But trends also reveal that industries are making progress in reducing these chemical emissions. Reported releases of 11 ozone depleting chemicals emitted by Kentucky industries fell 52 percent between 1991 and 1994.

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[8] American Lung Association. (1996). *National health interview survey*. Washington, DC: Author.

[9] Kentucky Department for Environmental Protection. (1996). *Toxic release inventory report*. Frankfort, KY: Author.

[10] Spencer, H. (1996). *Kentucky greenhouse gas inventory*. Louisville, KY: Kentucky Institute for Environment and Sustainable Development, Center of Environmental Engineering, University of Louisville.

Many of the air quality improvements are due to various federal, state, and local regulatory measures to control air pollution from both large and small sources. The Kentucky Division for Air Quality currently regulates 2,082 air pollution sources and the Jefferson County Air Pollution Control District regulates 1,587 sources. About 10 percent of these sources were in violation of air quality rules in 1995, 217 of which were fined.

Many large air pollution sources will be required to apply for new air quality Title V permits in 1996. The Title V program, required under the Clean Air Act Amendments of 1990, is designed to improve the permitting process. The permit applications, due December 1996, are expected to take three to five years for the state to process and will be funded by fees charged to air pollution sources. In fiscal year 1995, $5.5 million in fees were collected by the Division for Air Quality from 963 sources. This amounted to a fee of about $34.35 per ton of pollutant emitted. The fees accounted for 64 percent of the division's budget in 1995.

Waste Management

Managing Kentucky's waste has long been a challenge. But during the past decade the state has met this challenge head on and passed numerous laws and regulations to further promote the proper disposal of waste. Yet despite these efforts, improper disposal of solid and hazardous waste still threatens our environment.

Kentuckians are producing more waste than ever before, about 4.4 pounds per person.[12] But more Kentuckians are now disposing of their waste properly. About 161,000 more Kentucky households participated in a garbage collection program in 1995 than was the case in 1994. It is now estimated that 1.17 million or 80 percent of the state's households are disposing of their garbage properly. However, participation rates vary across Kentucky. For example, 17 counties report less than a 50 percent household participation rate in garbage collection services.[13]

Most of the municipal solid waste generated in Kentucky is disposed of in 24 state-of-the-art municipal solid waste (MSW) landfills. Nearly 3.6 million tons of municipal waste and 72,000 tons of industrial solid waste were disposed at these landfills in fiscal year 1995-96. This represented a 14 percent decline from the previous year. The decrease may be due to the diversion of waste to other facilities such as the 132 construction and demolition debris landfills now operating in the state and the recovery of materials for recycling. County solid waste reports reveal that about 1 million tons of waste, about 24 percent of the waste stream in Kentucky, was diverted from landfills in 1995 for recycling and composting. But plunging prices for paper, cardboard, and other recyclable commodities in 1995 and 1996 threaten many recycling programs in Kentucky.

Kentucky has 25 years of statewide capacity permitted at the 24 MSW landfills, compared to less than five years of capacity just four years ago. As anticipated, tipping fees have increased due to the more stringent state and federal landfill construction and operating standards. Nationwide, municipal solid waste landfill tipping fees have increased 400 percent since 1985.[14] The average landfill tipping fee in Kentucky has increased 27 percent since 1993 and now average $27.49 per ton.[15] Average household garbage collection rates have almost doubled, increasing from $5 a month in 1992 to $9.70 per month in 1995.

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[11] Kentucky Department for Environmental Protection. (1996). *Toxic release inventory report.* Frankfort, KY: Author.

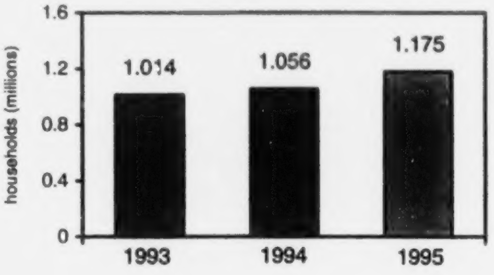
[12] USEPA. (1996). *Characterization of municipal solid waste in the US: 1995 update.* Washington, DC: Author.

[13] *Annual County Solid Waste Reports.* (1995). Commonwealth of Kentucky.

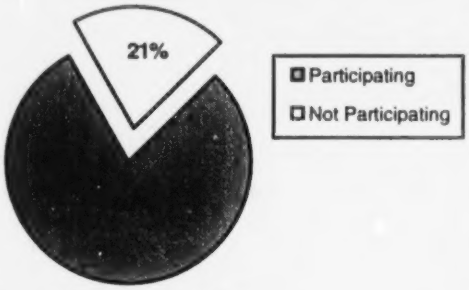
[14] Repa, E.W., Blakey, A. (1996). Municipal solid waste disposal trends: 1996 update. *Waste Age*, 43.

[15] National Solid Waste Management Association. (1996, August 8). Fax transmission from Edward W. Repa on tipping fees in Kentucky.

FIGURE 24.2
Kentucky Households Participating in Garbage Collection, 1995
(in millions)



Percent of Kentucky Households Participating in Garbage Collection, 1995



Source: County Solid Waste Annual Reports

While the state has made great progress in permitting new state-of-the art landfills, 56 substandard landfills that closed in 1992 remain a significant challenge. These landfills were issued closure permits in the spring of 1996 and are required to monitor groundwater for the next two years. Already, 13 old landfills have detected groundwater contamination. One landfill, Roe Creek in Lawrence County, was classified as a state Superfund site in 1995 after bags of asbestos were found washing into a nearby creek. The state has spent $117,000 to contain the Roe Creek site and recently fined the company $4.6 million.

The state has placed increased priority on the clean up of solid waste dumps in the past few years. During 1995, a record 1,761 open garbage dumps, were cleaned up by local governments at an average cost of $2,135 per dump. And more is being done to enforce open dumping laws. More violations of local open dump ordinances were cited in 1995 than in any previous year. Most of the 4,739 violations cited were resolved out of court; only 29 percent resulted in court action.

Tire piles have received increased attention as well. In 1996, six of the largest sites, containing 1.8 million tires, were or are in the process of being cleaned up at a cost to the state of $1.6 million. But 187 tire piles, along with hundreds of open garbage dumps, remain scattered across the state and resources are limited to address many of these sites.

The state has also made headway on cleaning up contaminated hazardous waste sites. During the past two years, 500 contaminated waste sites were identified and 326 were remediated. The cleanup of Kentucky's 20 federal Superfund sites, while oftentimes slow, continues. Close to 300,000 Kentuckians, 42,000 of which are children, live within four miles of a federal Superfund site.[16] Cleanup activities at five of Kentucky's federal Superfund sites have been completed and now are in long-term monitoring and maintenance.

For most federal Superfund sites, monitoring and maintenance will last for many years. For example, Maxey Flats, a federal Superfund radioactive waste site located in Fleming County, will be monitored for hundreds of years. Four hundred responsible parties recently agreed to pay $60 million to contain the 4.75 million cubic feet of mostly low-level radioactive waste dumped at the site.

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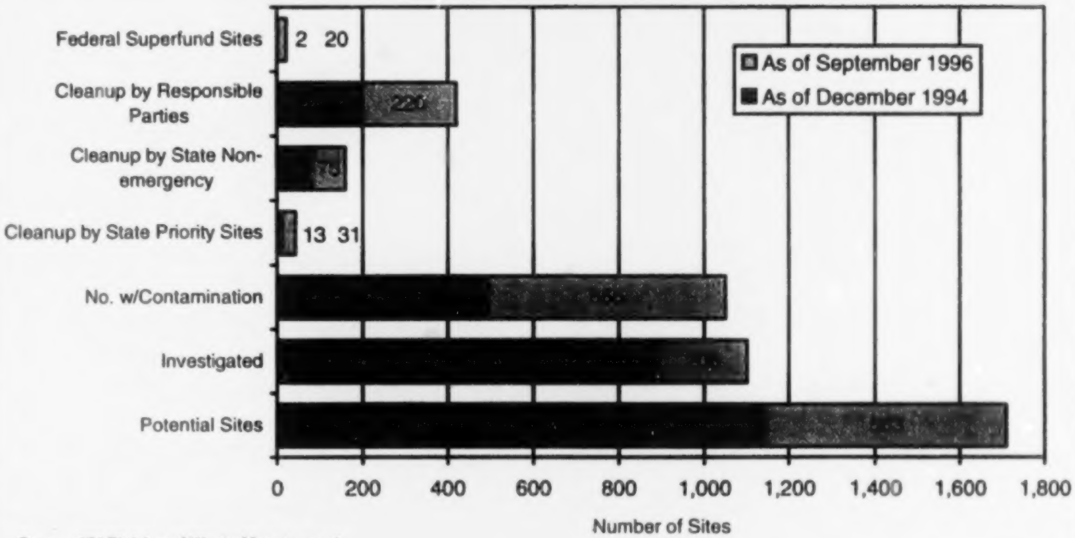
[16] Landview II. (1995, April). Mapping of selected EPA-regulated sites.

Addressing urban commercial or industrial contaminated sites, known as brownfields, has also received increased national and state attention. It is estimated that nationwide there are 130,000 to 450,000 contaminated commercial and industrial urban sites. These sites are disproportionately located in communities of color or in poor neighborhoods. Louisville was selected in 1995 as one of the U.S. EPA's 50 brownfield pilot projects to assess, safely clean up, and sustainably reuse brownfields. Brownfields cost the city about $8.7 million in lost property tax revenues and have significantly affected the revitalization of inner-city neighborhoods.[17]

FIGURE 24.3

Status of Contaminated Waste Sites in Kentucky



Source: KY Division of Waste Management

About 530 leaking underground petroleum storage tanks are in long-term cleanup since the state began to regulate these tanks in 1986. Another 18,000 have been closed or removed. But half of the 20,368 active underground storage tanks in Kentucky still require closure, removal, or upgrading to meet the 1998 federal spill and corrosion protection requirements.

Safe Drinking Water

More Kentuckians now have access to drinking water treated and supplied by a public water system. About 80 percent of the state's households are served by public drinking water.[18] But how safe is the drinking water piped to our homes and businesses? In 1995, 51 percent of the 767 public drinking water systems operating in the state had one or more violations of drinking water rules. Most of the violations were monitoring and reporting infractions, although 39 systems did exceed drinking water standards. The most common violations of the drinking water standards were coliform bacteria and turbidity which are indicators of microbiological contamination. Fifteen plants also violated the standard for trihalomethanes, a suspected cancer-causing organic chemical created as a byproduct during the disinfection of drinking water.

A majority of the drinking water violations continue to be committed by small systems serving 3,300 or fewer people. In 1995, 338 of these small systems accounted for 93 percent of the violations cited. Many small systems do not have the expertise, equipment, or resources to meet drinking water standards.

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[17] USEPA. (1996, February). *EPA brownfields pilot—Louisville, Kentucky.* (Publication EPA/500/F-95/012). Washington, DC: Author.

[18] Bureau of the Census. (1990). *Census of population and housing, Kentucky, 1990.* Washington, DC: U.S. Dept. of Commerce.

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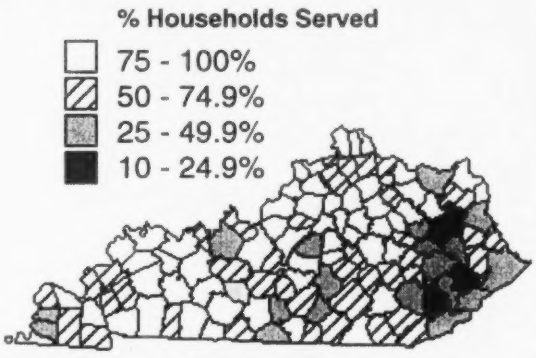
While treated public drinking water is generally considered safe for consumption, the vulnerability of water supplies to contamination do not permit us to take its quality for granted. Evidence of this risk to drinking water can be seen in the waterborne disease outbreaks reported in 17 states during 1993 and 1994.[19] While the last waterborne disease outbreak in Kentucky was more than 10 years ago, the threat still remains.

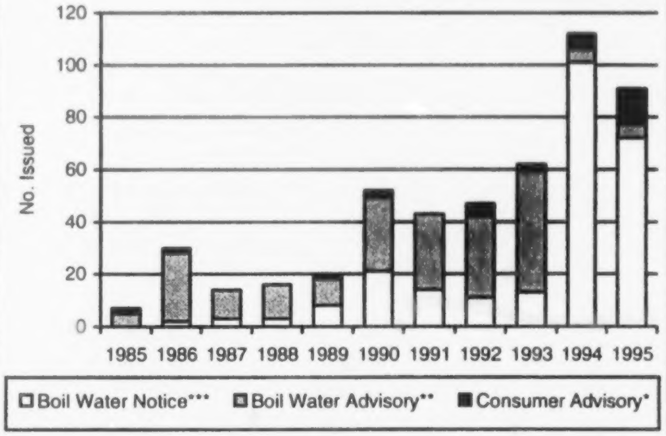
FIGURE 24.4
Kentucky Households Served by Public Drinking Water



Source: 1990 U.S. Census of Population and Housing

Turbidity contamination is a particular concern. Inadequate water treatment for turbidity was associated with the deadly waterborne disease outbreak in Milwaukee in 1993 which hospitalized 4,000 people, 100 of whom died. The outbreak was caused by Cryptosporidium, a pathogenic organism transmitted through the feces of infected animals. Consumption of the parasitic cyst causes gastrointestinal problems. While most people recover within a few weeks, children, the elderly, cancer patients, and people with AIDS are at risk from prolonged illness and possible death. More than 15,000 people were served by water systems with persistent violations of bacteria and turbidity rules during 1995. It is not known how extensive "crypto" is in Kentucky since monitoring for the parasite in drinking water is currently not required. The U.S. EPA will require large drinking water systems to begin monitoring for the parasite in 1997.

FIGURE 24.5
Public Drinking Water Advisories, Notices in Kentucky, 1985-1995



**Issued when chemical contamination is detected above drinking water standards.*
*** Issued when there is potential for bacteriological contamination of drinking water.*
**** Issued when evidence shows bacteriological contamination of drinking water.*

Source: KY Division of Water

Chemicals pose another threat to Kentucky's drinking water. The Division of Water recently completed a round of tests for 68 chemicals at drinking water plants. The tests, conducted from 1993 through 1995, detected unsafe levels of chemicals in the drinking water of 47 systems. These systems serve an estimated 187,000 people. Some of the chemicals found occur in nature but can also be a byproduct of industrial use. Based on these and other tests, 20 advisories were issued by the Division of Water in 1994 and 1995, warning consumers not to drink the water due to chemical contamination.

Even if the water at the treatment plant is safe, there is still a possibility that by the time it reaches a home or business it could be contaminated. A Centers for Disease Control study found that during the past decade, 24 percent of the waterborne disease outbreaks were attributed to contamination of drinking water in the distribution system. In many areas of the state, distribution systems have not been maintained, resulting in deterioration, leakage, and failure. Water systems in Kentucky lose, on average, 41 million gallons of water each year.[20] Deteriorating pipes not only can cause water loss, they can also allow infiltration of contaminants during pressure losses. During 1994 and 1995, 173 boil water notices were issued in Kentucky primarily due to line breaks. This is a significant increase from past years which is attributed to greater efforts by water systems to report line breaks and educate the public about possible contamination problems.

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[19] Centers for Disease Control. (1995). *Surveillance for waterborne disease outbreaks—United States, 1993-1994.* (Vol. 45). Washington, DC: U.S. Department of Health and Human Services.

The increase in boil water notices also reinforces the need to upgrade Kentucky's drinking water infrastructure. Most water systems are more than 30 years old and require improvements. Each year millions of dollars are spent on upgrading systems. But more is needed. A drinking water revolving loan fund was recently established at the national level to provide states with up to $1 billion to fund infrastructure improvements and other activities to meet the 1996 amendments to the Safe Drinking Water Act. While water system investments can be costly, the Environmental Quality Commission finds that the average monthly household in the state still only pays about 64 cents per day for treated drinking water.[21]

Many communities have recognized the need to do a better job in planning for future water supplies. In Kentucky, 115 counties are in the process of developing long-range water supply plans. Some communities are also working to protect their water supplies. Of the 382 communities that depend on groundwater for public water supplies, 79 are developing plans to prevent contamination of the resource. However, most Kentucky communities do not have specific plans or programs to protect drinking water supplies.

Half a million Kentuckians currently rely on 207,000 private water wells for their drinking water supplies. Unfortunately, not much data on groundwater quality exist in Kentucky. Private wells are not required to be tested for contamination. However, local health departments will test water wells for bacteria upon request. These tests provide some insight into the quality of private water wells. During 1995, 54 percent of the 3,000 private water wells sampled by the health officials tested positive for coliform bacteria. According to state health officials, many private wells are not routinely tested or properly maintained.

For a majority of Kentuckians drinking water is safe. But more must be done to protect supplies and provide all Kentuckians with safe drinking water. Recognizing this need, Governor Patton recently established a Water Resource Development Commission to gather information and prepare a statewide plan for providing potable water to all Kentuckians by the year 2020. In addition, efforts must be made to strengthen training and technical assistance for drinking water system operators; enforce safe drinking water regulations while also streamlining monitoring requirements; develop new, more holistic approaches to protecting drinking water supplies; and establish an aggressive state education program to inform private water well owners about proper water well testing and maintenance.

Water Quality

According to a 1994 University of Kentucky poll, Kentuckians consider water pollution one of the biggest environmental problems facing the state. Kentucky's waterways continue to be affected by pollution, but there are signs of improvement. Data collected from the 44 monitoring stations show that in 1995, 31 percent of the 5,858 miles of waterways monitored in Kentucky were affected by pollution, compared to 42 percent in 1993.[22] While this is good news for all Kentuckians, many waterways still remain unfit for swimming, fishing, or for use as a drinking water source.

Bacteria remains the top water pollution problem in the state. Just this summer, swimming advisories were issued along three of the state's 13 major rivers—the Kentucky, Upper Cumberland, and Licking rivers—due to high levels of fecal coliform bacteria. The public was also advised not to swim or have any body contact with rivers in and directly below urban areas, particularly after a significant rainfall, because of the increased potential for exposure to pollution from sewage.

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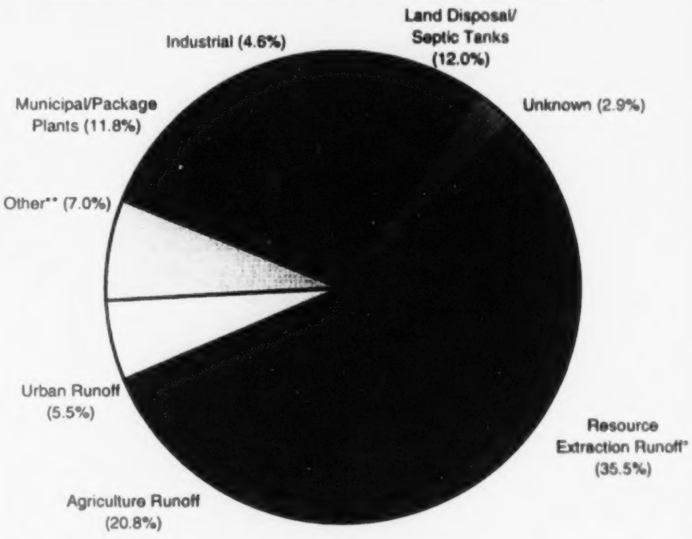
[20] Kentucky Public Service Commission records. (1996).

[21] Kentucky Public Service Commission records. (1996).

[22] Kentucky Division of Water. (1996, September). *1996 Kentucky report to Congress on water quality* (draft). Frankfort, KY: Author.

Improperly operated sewage treatment plants were among the greatest sources of water pollution in the Commonwealth, responsible for 65 percent of the bacteria problems in our waterways. About 56 percent of the state's households are connected to sewers and have their sewage treated at a wastewater plant. During 1995, 245 major and minor municipal sewage treatment plants, 1,706 minor sewage treatment or small package plants, and 1,276 industrial wastewater plants held permits to operate in Kentucky. But many wastewater treatment plants continue to violate water quality rules.* In 1995, more than 50,000 violations were cited at wastewater treatment plants. Most of these violations occurred at small package plants (38 percent) and industrial wastewater plants (51 percent).

FIGURE 24.6
Sources of River, Stream Pollution in Kentucky



*Note: Based on miles affected, major impact. *Active and abandoned coal mine sources not combined, not distinctly separated in Water Quality report. **
**Includes combined sewer overflows, silviculture, habitat modification, construction/development.*

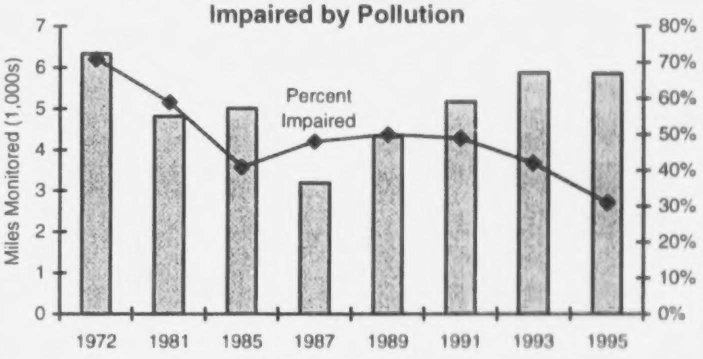
Source: Division of Water, Kentucky 1996 Report to Congress on Water Quality

Efforts to address water pollution from wastewater treatment plants and consolidate small package plants have proceeded. Since 1986, 733 small package treatment plants have been deactivated. However, small package plants often remain the only sewage treatment option for small or rural communities. In the past 10 years, 979 new package plants were issued permits to operate in the state. Continued upgrading and regionalization of wastewater treatment plants, targeted enforcement at problem plants, financial resources to upgrade facilities, along with a strong program of technical assistance and training to wastewater treatment operators, will be necessary if problem plants are to be brought in compliance with clean water rules.

While most of the focus of the federal Clean Water Act has been on controlling pollution from large municipal and industrial sources, poorly maintained septic tanks and illegal straight pipe discharges from homes and businesses are contributing significantly to pollution problems in many waterways. A survey conducted along the north fork of the Kentucky River in Letcher County, found that more than 1,000 straight pipes were discharging untreated sewage directly into the water. In Harlan County, 660 residences are known to be dumping raw sewage into creeks. More than 3,000 homes in Floyd County are discharging sewage to community sewers that in turn discharge directly to the river. A county-by-county survey would likely reveal that this is a problem statewide. Many of the problems associated with straight pipes are localized in nature and will require both state and local solutions.

Runoff pollution from coal mines and farmlands remains a problem as well. Data from monitoring stations in Kentucky reveal that coal mining was responsible for 36 percent of the pollution problems found in monitoring waterways.[23] Coal mines, both active and inactive, are impairing 1,021 miles of monitored waterways by contributing sediment, acid mine drainage, and other pollutants. And runoff from farmlands is causing 21 percent of the water pollution problems. Agricultural operations are polluting 598 miles of streams monitored in the state with sediment, organic chemicals such as pesticides, and bacteria.[24] The Division of Water is now moving towards a watershed-based approach to better target contaminated runoff and other pollution problems. The Division plans to select a waterway for its pilot watershed initiative in 1996 and create local/state partnerships and strategies to address water pollution problems. Another effort underway to combat runoff pollution from farmlands is the Agriculture Water Quality Authority. The authority was established by the 1994 General Assembly to develop plans and work with landowners to address runoff pollution from farms and logging operations.

FIGURE 24.7
Monitored Kentucky Waterways Impaired by Pollution



Toxic chemicals also pose problems in a number of waterways. However, reported toxic chemical releases by industries to Kentucky's waterways have declined from 1.4 million pounds in 1988, to 40,292 pounds in 1994.[25] More municipal and industrial wastewater treatment plants are also meeting effluent toxicity requirements. But the number of toxic spills reported to state officials continues to rise and remains a threat to clean water. During 1995, 3,749 spills were reported to state officials, up from 2,097 in 1990. In 1995, 172,000 fish were killed due to spills and other pollution incidents, the highest number reported since 1989.

Fish consumption advisories remain in effect along the Ohio River, the Green River Lake, five ponds in the West Kentucky Wildlife Management Area, Little Bayou Creek in McCracken County, West Four Drakes Creek in Simpson and Warren counties, and Town Branch in Logan, Butler, and Muhlenburg counties due to unsafe levels of toxic chemicals (PCBs, chlordane, or mercury) found in fish tissue.

Water quality in some of Kentucky's lakes appears to be improving. Of the 104 public lakes assessed in Kentucky during 1995, 34 were affected by pollution, compared to 36 in 1993.[26] The principal sources of pollution to our public lakes include runoff from farmlands and abandoned coal mines and poorly operated wastewater treatment plants.

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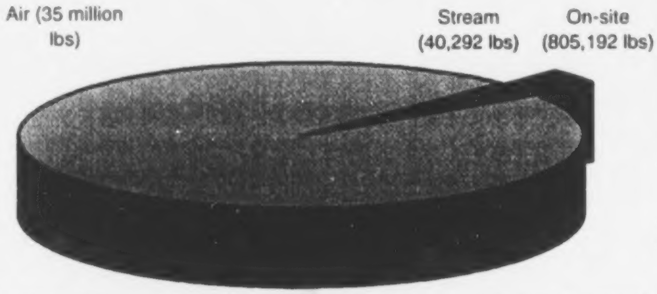
[23] Kentucky Division of Water. (1996). *1996 Kentucky report to Congress on water quality* (draft).

[24] Kentucky Division of Water. (1996). *1996 Kentucky report to Congress on water quality* (draft).

[25] Kentucky Department for Environmental Protection. (1996). *Toxic release inventory report*. Frankfort, KY: Author.

[26] Kentucky Division of Water. *1996 Kentucky report to Congress on water quality* (draft).

FIGURE 24.8
Toxic Releases in Kentucky, 1994



Note: Includes new chemicals added to the reportable list in recent years. As reported by industrial sources.
Source: Toxic Release Inventory Report for Kentucky

Kentucky's groundwater program is making advances to strengthen protection strategies. Many rural Kentuckians rely on groundwater as their only source of drinking water. New state groundwater regulations, enacted in 1994, will require agricultural, industrial, and other operations that have the potential to pollute groundwater, to develop and implement groundwater protection plans in 1995. While the effectiveness of this program will be difficult to measure, a new state groundwater monitoring network will provide, for the first time, information on groundwater quality in the Commonwealth. The state began monitoring groundwater at 70 well and spring locations across the state in 1995.

Kentucky's waterways face increasing threats as state and federal program budgets erode, resulting in loss of staff and resources. The challenge to reverse the negative trends of water pollution will require new and innovative approaches such as watershed-based management, an infusion of financial resources, and collective partnerships among federal/state/and local governments, businesses, and communities alike.

Kentucky's Economic Trends and Environmental Futures

Kentucky's economy and its environment are inextricably linked—the economic development policies we adopt and the actions we take to implement those policies can, and do, affect the quality of our environmental assets. Forward-looking legislation and policy are dependent upon information about the effects of different mixes in the pursuit of economic development and the promotion of environmental protection in Kentucky. The problem is not one of tradeoffs between the environment and the economy, but the development of policies and programs and private sector practices that will protect the environment in order to permit more economic development.

By Peter B. Meyer
University of Louisville

Kentucky's economy and environment are inextricably linked. The economic development policies we adopt and the actions we take to implement those policies can, and do, affect the quality of the air, water, land, and other environmental assets of the Commonwealth. By the same token, the quality of the environment can affect Kentucky's ability to develop its economy. While a despoiled environment can diminish the Commonwealth's attractiveness for development, a clean, healthy, aesthetically pleasing environment can actually serve as a stimulus to economic growth. Thus, it is imperative that public policy pursue a balance of economic development and environmental protection in Kentucky. The resources of the public sector need to be committed to sustainable development so the Commonwealth can enable people to accomplish their current economic goals without encumbering the resources and quality of life for future generations of Kentuckians.

Determining where to begin pursuing sustainable development, however, presents a challenge. In order to plan for the future, we must first understand how economic policies and actions affect environmental preservation. The Forecasting Kentucky's Environmental Futures (FKEF) Project sought to begin this process by identifying those policy alternatives and directions that have the greatest potential for achieving both enhanced socio-economic well-being and a stronger natural environment. Fortunately, but also problematically, policy alternatives and potential changes abound. Economic and environmental policymakers face many difficult choices such as:

- Emphasizing reliance on natural gas for automobiles or promoting expanded use of mass transit where possible
- Investing state resources in educating the public on environmental issues in order to promote more sustainable household behaviors or spending those resources on helping companies to adopt—and market—the most advanced environment-protecting technologies, showing them how to profit by doing so
- Providing subsidies to attract new firms wherever they locate in the Commonwealth or targeting support to direct development in particular regions
- Deciding between alternative means of stimulating forest products use and secondary wood processing in the Commonwealth, which may have indistinguishable economic effects but different environmental consequences

All of these choices involve the pursuit of financial gain for the citizens of Kentucky, but all also reflect the reality of environmental impacts—and decisionmakers are rarely provided with adequate information on the outcomes of choices they must make. Thus, the importance of this project becomes clear: FKEF attempts to provide some sense of the long-term effects of interactions between shifts in economic activity and environmental policy.

The FKEF project was undertaken by the Center for Environmental Management (CEM), a component of the Kentucky Institute for the Environment and Sustainable Development at the University of Louisville (KIESD) for the Kentucky Long-Term Policy Research Center (LTPRC). It builds on the *Kentucky Outlook 2000* Comparative Risk project now being completed by the Cabinet for Natural Resources and Environmental Protection (CNREP). The project combines detailed consultations and focus group meetings involving knowledgeable parties from government, industry, higher education, and environmental organizations with computer-based projection techniques to identify and test alternative environmental futures. To obtain systematic projections, the FKEF team pursued mathematical forecasts, combining economic and environmental conditions in the Commonwealth around the year 2025. The numerical findings presented and discussed here come from two sources: (1) The REMI economic model employed by the Legislative Research Commission for state economic projections (This type of model automatically extends current trends to the future, so the forecasts are solidly grounded in current economic conditions and policy directions.); and, (2) POLESTAR, a decision-support tool that links environmental conditions to levels of population and gross domestic product.

Projecting Kentucky's Futures

If Kentucky's current economic and demographic trends remain unchanged, the Commonwealth will likely face serious environmental problems. Our baseline projection, which envisions no significant shifts in technology, regulatory practice, production techniques, or patterns of consumption beyond those currently evident in economic and demographic trends, shows significant economic gains, but, as Table 25.1 indicates, at substantial environmental cost. The projected 40 percent increase in per capita income and constant purchasing power will likely exact its price in continued deterioration of the natural environment, as future levels of both air pollutants and energy consumption will become significantly worse. In this baseline projection, the technical relationships between levels of economic activity and environmental consequences (emissions, wastes, resource consumption, energy generation and use, land required for infrastructure and other uses, etc.) were assumed to be effectively unchanged from those that now exist.

TABLE 25.1

Changes in Economic and Environmental Conditions in Kentucky

Baseline Projections for 2025 under Status Quo

Economic or Environmental Condition	After 30 Years	
	Total Level	% Change
Gross Domestic Product (total output)	$111 billion	47%
Population	4 million	5%
Gross Domestic Product per Person	$27,750	40%
Annual Total Energy Consumed	2,073 Petajoules	44%
Annual Carbon Dioxide Emissions	278 Megatons	17%
Annual Releases of Sulphur Dioxide	914 Kilotons	12%
Annual Volatile Organic Compounds	1,104 Kilotons	7%

Of course, this baseline projection is fundamentally unrealistic because it assumes no change in current economic patterns. Thus we also developed a restructured economic projection to account for deviations from the baseline in particular sectors. Experts who participated in focus groups for this project agree that the Kentucky economy will change in five key sectors:

- Tobacco and production agriculture
- Coal mining
- Secondary wood processing
- Manufacturing attraction and succession
- Tourism

TABLE 25.2
Sectoral Changes Employed in the Restructured Economy Projection

Sector	Change Introduced into Projection
Tobacco & Production Agriculture	50% reduction in the 1995 burley quota by the year 2025
Coal Mining	15% reduction over current REMI projection for 2025 in coal mined in Kentucky, distributed proportionally over Eastern and Western coalfields
Secondary Wood Processing	Increase over REMI projections for 2025 of 20% in relatively low-skill wood processing activities and 10% in relatively high-skill wood processing production
Manufacturing Attraction and Succession	Increases in the REMI projections for 1995 in a number of sectors: 5% in metal machining and related work; 20% in machinery production; 10% in automobile production; 15% in plastic products manufacturing
Tourism	A 3 million person increase in the number of tourism nights projected by REMI for 2025, representing about a 7% increase

While the first two of these changes are driven by external forces, the last three represent successful pursuit of economic development by the Commonwealth. In general, the restructured projection involves decreased reliance on tobacco farming, increased demand for forestry yields as inputs to secondary wood processing industries, decreased mining activity, and increased manufacturing and tourism. Such responses to market pressures would not significantly alter economic growth expectations, but might affect environmental impacts. These changes and our rationales for choosing them are summarized in Table 25.2.

Economic shifts—and their environmental consequences—will not, however, be experienced similarly across the entire Commonwealth. Kentucky enjoys extensive variety in its geographic and economic characteristics, including mountainous areas, wide open rural areas, and cities of diverse size, all with varying concentrations of income from different sources. To accommodate this diversity, the state's REMI econometric model was configured to encompass four regions: Bluegrass, Central, East, and West (See Figure 25.1). While the Eastern region is exceptionally sensitive to coal and timber issues, the Bluegrass, which includes the Lexington, Louisville, and Northern Kentucky areas, is currently the most environmentally stressed, especially with respect to air quality. The fastest future economic and population growth will likely occur in this region, so not surprisingly, it promises to be the hardest hit environmentally as well. In fact, the projected 43 percent increase in ground-level pollutants in the Bluegrass threatens to exceed current federal limits and could cause the Commonwealth to lose major federal government funds. The Central region also risks damaged air quality because of power plant expansions. Figure 25.2A and Figure 25.2B illustrate the variety of air pollution emissions that might be experienced across the regions under the baseline economic scenario.

Figure 25.1
Kentucky Regions

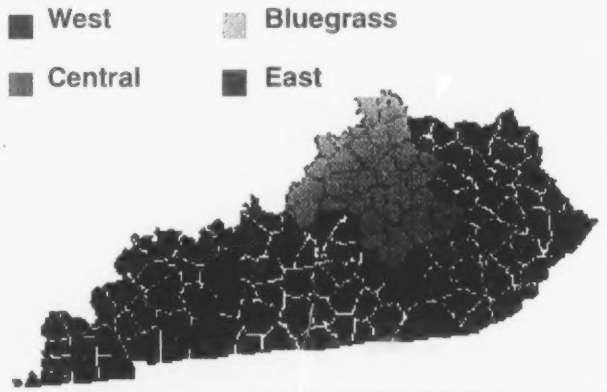


FIGURE 25.2A
Greenhouse Gas Emissions Change, 1995-2025
(Baseline Projection, Status Quo Scenario)

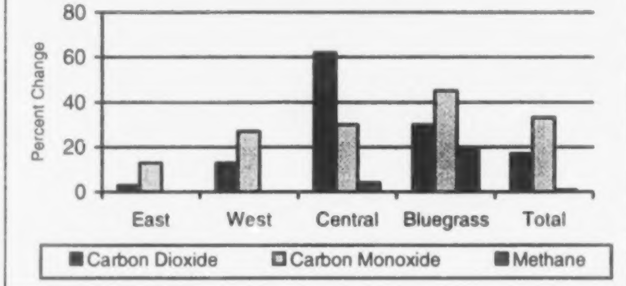
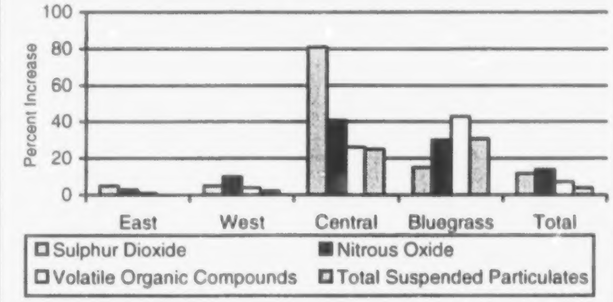


FIGURE 25.2B
Ground-Level Emissions Change, 1995-2025
(Baseline Projection, Status Quo Scenario)

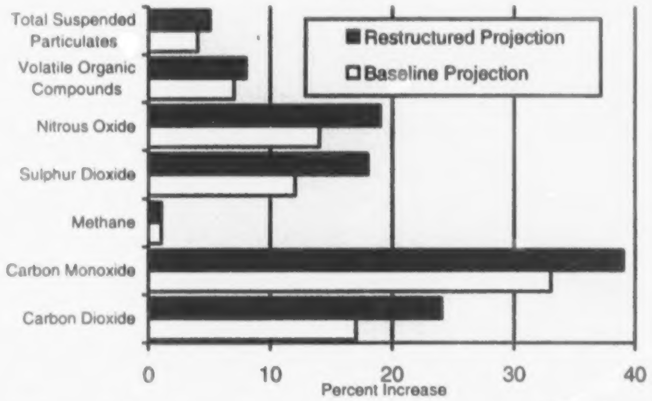


Moreover, the possible restructuring of the Kentucky economy will not solve the environmental problems that are emerging. Figure 25.3 shows graphically that the restructured Kentucky economy that might emerge over the next 30 years could pose even greater environmental challenges in the form of air pollution emissions than would continued expansion of the economy the Commonwealth now experiences. The environmental challenges in fact threaten to choke off economic expansion, especially if there are physical, human health, or legal constraints on possible increases in air emissions in key urban regions.

These gloomy projections pose a real problem. However, they have not taken into consideration a whole range of changes in household tastes and behaviors, business priorities and practices, and possible regulatory shifts. Nor have they incorporated possible changes in the adoption and acceptance of currently available but underutilized technologies that could reduce negative environmental effects without damaging prospects for economic gain. We turn next to the impacts of these types of changes on environmental deterioration.

The Prospects for More Sustainable Development

FIGURE 25.3
Change in Emissions, 1995-2025
Status Quo Projections



The FKEF project considered two broad types of shifts in the context in which economic activity and the environment interact: technological changes and policy and practice changes. In both instances, we took care to include only changes that appear probable at the present time. That is, we projected changes that seem probable prospects in light of current sociological and behavioral data on environmental practices and currently available technologies for reducing negative environmental impacts. The two sets of changes are summarized in Table 25.3.

TABLE 25.3
Sector Changes Assumed under Different Scenarios

Sector	Technical Change Assumed	Policy, Practice Changes Assumed
Transportation	1. Increased fuel efficiency of vehicles. 2. Reduced emissions per mile driven. 3. Changes in fuels used.	1. Changes in mass transit, assuming major new use in urban areas. 2. Reduced car miles driven per capita.
Households	1. Major increase in lighting, appliance efficiency. 2. Some shift to renewable power to heat and cool homes. 3. Increased energy efficiency of heating and cooling.	1. Some energy conservation obtained through changes in use behaviors.
Service Sector	1. Total electricity consumption falls substantially thanks to engineering efficiency gains.	1. Total electricity consumption decreases due to consumer taste, marketing changes.
Manufacturing	1. Total power use exhibits a significant drop due to technological changes. 2. Shift from reliance on fossil fuels (other than coal) towards renewables. 3. Chemical industry use of coal, rather than oil or gas, as a feedstock for plastics production rises.	1. Power use falls somewhat due to efforts to conserve.
Land Use	1. Built Environment required per capita falls substantially overall as the result of technological gains, falling more in denser population areas. 2. Forest lands grow in response.	1. Built Environment required per capita in the Bluegrass Region falls significantly due to taste changes. 2. Built Environment required per capita in the Eastern Region rises a bit due to new infrastructure. 3. Forest lands change in response.
Solid Waste	1. Volume of packaging on consumer goods falls, reducing solid waste.	1. Total per capita household solid waste generation falls due to new buying habits. 2. Recycling by all sectors rises substantially.

The same forces that may produce restructuring of the Kentucky economy may also generate these types of changes. Growing awareness by firms, businesses, and families of the development problem posed by worsening environmental conditions could over time accelerate interest in, and acceptance of, new practices and available technologies. Moreover, state government efforts could, conceivably, systematically attempt to accelerate adoption of available technologies or shift the practices and behaviors of households, firms, and local governments. Either type of change would significantly reduce the negative impacts of economic expansion on the environment of the Commonwealth, as Table 25.4 illustrates.

TABLE 25.4
Environmental Impacts in 2025 Under Technology and Policy Change Scenarios
(measured by percentage change in impact relative to 1995 data)

Impact Measure	Status Quo (no change)	Technology Change	Policy Change
Air Emissions			
Carbon Dioxide	17	03	12
	24	*09*	*19*
Carbon Monoxide	33	11	38
	39	*18*	*44*
Methane	01	01	-05
	01	*01*	*-06*
Sulphur Dioxide	12	06	09
	18	*10*	*15*
Nitrous Oxide	14	02	11
	19	*05*	*16*
Volatile Organic	07	-01	07
Compounds	*08*	*00*	*08*
Total Suspended	04	-03	03
Particulates	*05*	*-03*	*04*
Municipal Solid	05	-01	-12
Waste Generated	*05*	*-01*	*-12*

By way of example, it is clear that either change could reduce the flow of waste to municipal landfills below the 5 percent increase that would be expected under the current conditions (status quo), with policy and practice changes—largely increased recycling—having the greatest effect. Energy demands could also be reduced substantially—and with them an array of air emissions—but in this instance, the greatest improvement would come from adoption of available energy-saving technologies, not shifts in policy or behavior.

The FKEF project did not attempt to predict which changes would be most likely be adopted in Kentucky, nor did we derive prescriptions for how to generate the shifts. Our focus group consultations with a broad range of experts identified a series of five possible policy context shifts that might shape the prospects for such changes:

- *The extent of Environmental Literacy,* which would affect people's improved understanding of the environmental consequences of their actions and decisions, thus affecting the prospect for changes in policies and practices
- *The degree of public acceptance of the principles of sustainable economic development,* reflecting concern for accelerated adoption of available technologies that could reduce or limit the adverse environmental effects of economic expansion
- *The need for leadership at the level of state government,* in developing, recognizing, and involving the electorate in choosing among policy alternatives that could increase the prospects for pursuit of the dual objectives of economic expansion and environmental preservation or improvement
- *Construction of needed public works,* and upgrading of the infrastructure for transportation, water and waste treatment facilities, and electronic data communications facilities in the Commonwealth, with their dual potential impacts on the economy and the environment
- *The prospect of energy use changes,* especially outside the Commonwealth, and their implications for the coal market and revenues from mining activity in Kentucky.

The prospect for implementation of the types of changes which could reduce the negative impacts of needed economic expansion on the Kentucky environment will clearly depend on the context in which they are pursued. While these five factors may be critical, as our advisory panels noted, the trends in them cannot be predicted with any certainty.

Findings and Policy Implications

The FKEF project conclusions about environmental futures may be stated simply, if not optimistically:

> *Elements of the Kentucky environment will deteriorate over the next 30 years under either economic projection, and even if all the changes in environmentally sensitive technologies and in policies, practices and behaviors considered here take place.*

The levels of deterioration in air quality in particular will be such that *environmental factors will slow the rate of economic growth and make the projected gains by 2025 unattainable* given current standards for required minimum environmental quality. Thus the problem is not one of the tradeoffs between the environment and the economy, but, rather, the development of policies and programs and private sector practices that will *protect the environment in order to permit more economic development.*

Considering the possible changes that might occur in the Kentucky economy and in its environmental practices over the next 30 years, the project provides additional insights:

- *Consideration of the advisability of economic restructuring should include assessment of environmental factors.* As our comparison of the baseline and restructured economic projection illustrates, the anticipated restructuring would involve significantly higher pollution levels, which may or may not be acceptable.
- *To the extent to which environmental factors may affect the capacity of the Commonwealth to increase incomes, Kentucky will face increased environment-income complementarity, rather than rising conflict, as time progresses.*
- *This sensitivity of economic prospects to environmental considerations may be geographically concentrated,* as our scenarios suggest. Statewide economic development

planning must therefore be sensitive to such vulnerabilities, since environmental deterioration could easily stymie plans for economic expansion.

- *For the immediate future, state efforts to promote adoption of available environmentally-sensitive technologies appear to hold substantially more promise for supporting the dual objectives of economic expansion and environmental protection than do regulatory, attitudinal or behavioral shifts.* This relationship may change over time, however, as policy context factors rather than public actions themselves affect behaviors, political priorities and the technologies available.
- *However, it is not appropriate to consider technological change and policy and practice change to be mutually exclusive.* They can be very complementary and may well interact so as to avoid further deterioration of the Kentucky environment as the population and economy of the Commonwealth continue to expand.

The pessimistic findings on the trends in Kentucky's environment, and the indications of possible means to minimize negative developments are a call for new focus in policy planning and assessment. The issues raised go far beyond the mandate of the Cabinet for Natural Resources and Environmental Protection: Kentucky's environmental futures will be shaped by transportation policy, educational policies and practices, land use plans and economic development and technology policies (NOT simply the volume of economic activity, but its types), agricultural policies and practices and so on. A brighter environmental future can be pursued, but only through recognition across the operating agencies of the public sector in the Commonwealth that the environmental implications of policies need to be considered, both in terms of the direct effects of public actions and in terms of the impacts on private sector decisionmaking. Without conscious coordinated public efforts to improve our environmental futures, we can expect deteriorated environmental conditions; with focused efforts and some limited but strategic resource commitments, we can maintain—and even accelerate—the pattern of improvement that we have been fortunate enough to witness over the past 15 years.

> *Elements of the Kentucky environment will deteriorate over the next 30 years under either economic projection, and even if all the changes in environmentally sensitive technologies and in policies, practices and behaviors considered here take place.*

Section V

Government and Civic Participation

Although the trends examined in this report will surely affect the way we work, the way we learn, and the way we live, they are not forces entirely beyond our control. We can strengthen or accelerate those trends that enrich our lives and work to change those that do not. Even when we cannot affect a trend directly, we can still respond to it in ways that will maximize benefits and minimize harm. No matter the trend or its effects or our control over it, action is essential. Timely and prescient action will help us create a brighter future for ourselves, our families, our communities. We must act as private individuals, of course, but cooperation and collaboration are also essential. Thus we conclude this trends report with a discussion of government and civic participation.

William Hoyt compares Kentucky's taxes to those of other states and examines trends in Kentucky taxation. He finds that Kentucky's sales tax revenue has failed to keep pace with other revenue sources and has led to an increased reliance on the individual income tax for general fund dollars. By broadening the sales tax base and lowering the rate, Kentucky could create a more stable and efficient tax system. In the next chapter, Peter Schirmer, Michael Childress and Charles Nett look at how the slow growth of Kentucky's revenue may affect future budgets, particularly when combined with the impacts of various demographic, social and economic trends discussed elsewhere in this report. In order to maintain the present level of services, Kentucky's spending would have to grow more quickly than revenue is expected to grow under the current tax system. As spending for corrections and health and human services continues to take a bigger slice of the budgetary pie, the share of dollars left over for higher education and numerous other functions is shrinking. Finally, Paul Blanchard examines trends in citizen participation—the most fundamental element of democratic government. Voter turnout is low everywhere, but even lower in Kentucky. Yet voting is not the sole means of public action; many non-voters are very active in their communities, through church groups, school committees and other organizations. Kentuckians may be more active in their communities than people elsewhere, and groups like the Mountain Association for Community Economic Development are working to strengthen these important community-level associations.

Government and civic participation, like everything else, will be affected by advancing technology. In fact, government, particularly at the federal level, has been a leader in providing copious information on the Internet, on CD-ROM, by fax and by phone. The next major step is to allow two-way transfers of information, which would enable citizens to do things like register an automobile, receive licenses and permits, and pay taxes and fees. Ultimately, improved communications technology should enable government to be more efficient, to be more responsive, and to accommodate the unique needs of citizens. Links between different groups may be forged and strengthened as a result of better communications, and organizations in one part of the state will be able to learn what organizations in another part of the state, like the Owsley County Action Team discussed in Paul Blanchard's chapter, are doing to strengthen their communities.

Still, people—not technology—are the building blocks of effective government and healthy public life. And trust is the cement that holds people together. In a recent survey, more than half of Kentuckians said they usually can trust people, compared to less than 40 percent nationally. More than half of Kentuckians also said they have volunteered time for civic, community or charitable activities within the past year. It is this "social capital" which will enable us to seek solutions to our most pressing problems and to respond quickly and intelligently to the important trends affecting our lives. The chapters from William Hoyt and Peter Schirmer, et al., make it clear that government alone cannot pay for all the things we need to do together. But when government works alongside non-profits, school councils, community action groups and other organizations, they provide an essential public arena in which we can take control of the trends affecting our lives, in which we can *take action*.

Trends in Kentucky Taxes and Their Implications for Future Tax Policy

The two major sources of state government revenue are the individual income and sales taxes. Over the past 20 years, the individual income tax has become a more important source of revenue while the sales tax has diminished in importance. The diminished role of the sales tax is not the result of legislative efforts; the steady downward trend is the result of changing economic conditions and consumption patterns. People are spending smaller percentages of their income for tangible goods and greater percentages of income for services. Therefore, Kentucky should expand the sales tax base to include services to consumers. Taxing services provided to businesses could put Kentucky services at a tremendous disadvantage against services provided by businesses in other states.

By William H. Hoyt
University of Kentucky

Reforms, or at least changes, in tax codes have become the norm for states since the late 1970s, with generally over half of the states enacting notable changes in their tax code each year. In 1990, 31 states enacted notable changes in their tax codes; in 1991 and 1992, 41 and 40 states, respectively, did so; and in 1994, 37 states enacted major changes.

Kentucky is no exception to this trend, engaging in several major changes in its tax code in the recent past. The 1990 legislative session was particularly active. During this session the general sales tax increased from 5 percent to 6 percent. This legislative session also made several changes in the state income tax code, eliminating the deductibility of federal income taxes; creating a low-income tax credit; and conforming to IRS codes. This same session also increased the top bracket for the corporate income tax from 7 percent to 8.25 percent. Other major changes in the 1990s include legislating (and then repealing) a 2 percent tax on health care providers and the exclusion of most private pension income from the state income tax.

With states changing tax codes so frequently, we may be led to ask how Kentucky compares to other states. How has taxation in Kentucky changed in the past 20 years and have we fallen behind? Do any other changes need to be made in Kentucky?

It is these three questions this chapter addresses by providing some general comparisons of Kentucky's primary sources of general revenue to other states as well as comparing Kentucky to other states in terms of the tax burden on its residents. From this brief review, we find that tax rates in Kentucky are close to the national average but tend to be somewhat higher than most of our surrounding states, perhaps our most obvious competitors for location of new industrial plants and business operations.

While tax rates have remained relatively unchanged in Kentucky in the recent past, we show the same is not true of our sources of revenue. During the past 20 years the role of the sales tax as a source of revenue has diminished dramatically, as its rate of growth has steadily declined while the growth in the individual income tax base has remained relatively constant.

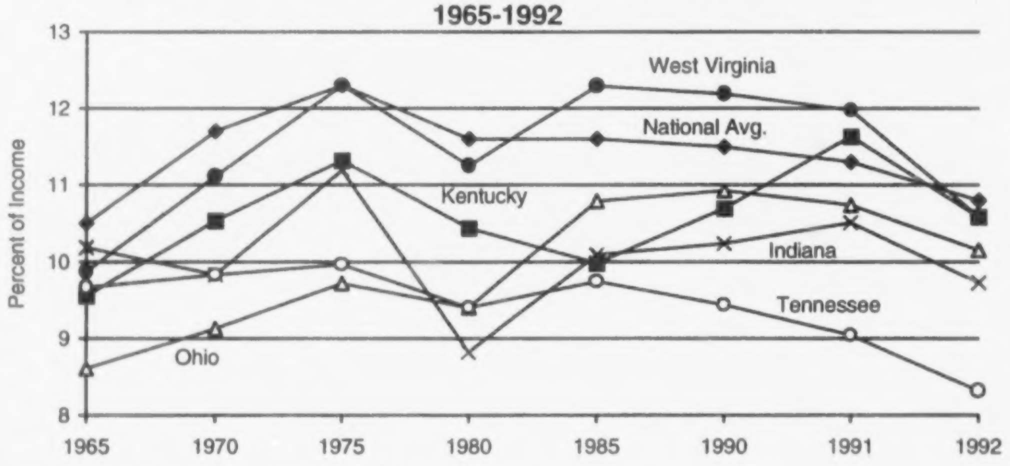
Despite or, in some cases, because of the numerous reforms in our tax code, significant changes should be made in our tax code. While there are some obvious changes that might be made in the individual income tax code, the primary focus of this chapter is on the general sales tax, for two reasons. First, given that the Kentucky individual income tax code is similar to that of the federal government, it is unlikely that major alterations, such as changes in itemized deductions or treatment of capital gains, will occur in Kentucky without first being implemented at the federal level. Second, because of underlying economic conditions and not legislation, it is the general sales tax that has changed the most in the past 20 years. Revenues from the general sales tax have not kept pace with either personal income or general expenditures by the state. This is a major reason for the underlying *structural deficit* that arose during the 1980s and necessitated the major tax increases in the 1990 legislative session.[1]

After discussing the reasons for the diminished role of the general sales tax and the associated *structural deficit*, we next propose a policy correction—broadening the general sales tax base to include services, rather than raising rates. This, we argue, is a more efficient way to collect taxes and should significantly reduce the *structural deficit* by providing a tax base that will keep pace with personal income and expenditures.

How Does Kentucky's Tax Burden Compare?

Figure 26.1 shows state and local tax revenue as a percentage of personal income for selected years from 1965 to 1992. As the figure indicates, Kentucky, while once well below the national average, had a tax burden comparable to the national average in 1992. In fact, in 1992 Kentucky was ranked 25th in state and local tax revenue as a share of income.[2] Compared to a benchmark set of states (Ohio, Indiana, Tennessee, and West Virginia), only West Virginia has a comparable tax burden, with Ohio, Indiana, and Tennessee having lower burdens, as a percentage of income.

FIGURE 26.1
State and Local Tax Revenue as a Percentage of Income 1965-1992



Source: Advisory Commission on Intergovernmental Relations (ACIR)

While Figure 26.1 suggests that Kentucky is similar to other states with respect to its tax burden, the distribution of taxes between the state and local government is significantly different in Kentucky from the "typical" state. Figure 26.2 depicts the shares of personal income collected from the general sales tax, individual income tax, corporate income tax and total state taxes for Kentucky, our benchmark states, and the nation. While Kentucky was at the national average in terms of its total tax burden as a percentage of personal income, it is far above average in terms of its state tax revenue as a percentage of personal income, ranking 6th in the nation. Figure 26.2 also suggests that there are some differences in how revenue is raised in Kentucky. The most striking difference from the national average is Kentucky's heavier reliance on the individual income tax than most states in the nation. Kentucky collects 2.7 percent of its personal income from the individual income tax while the national average is only 2.0 percent. Kentucky collects 2.2 percent of its revenue from the general sales tax with the national average being 2.1 percent.

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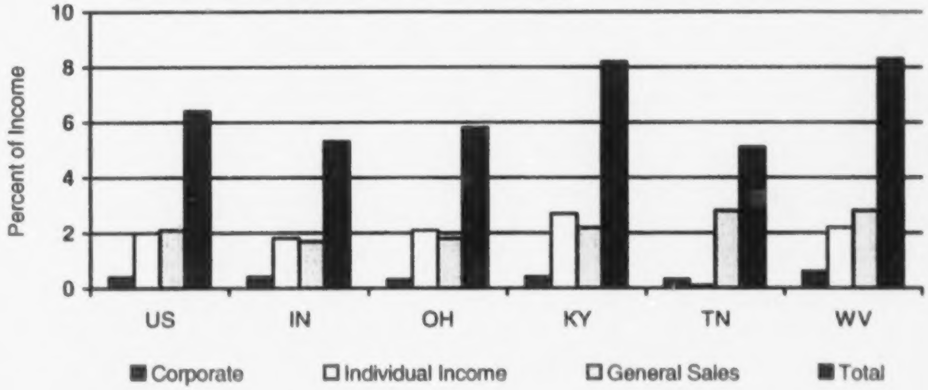
[1] See Schirmer, P., Childress, M.T., Nett, C.C. (1996). *$5.8 billion and change: An exploration of the long-term budgetary impact of trends affecting the commonwealth*. Frankfort, KY: The Kentucky Long Term Policy Research Center.

[2] These figures are from numerous volumes of Advisory Commission on Intergovernmental Relations (1995). *Significant features of fiscal federalism*. Washington, DC: Author.

FIGURE 26.2
State Tax Revenue as a Percentage of Income, 1992



Source: ACIR

While comparing states by measuring tax burden as a percentage of income offers some insight into the tax burdens on residents and businesses in the states, it is not the only measure, or perhaps even the best. One reason for high taxes as a percentage of income might be low incomes in the state (West Virginia, for example). Presumably, both residents and businesses when making a decision about where to locate, to the extent taxes are considered, would consider the rates, not percentage of income, as the rate will determine how much of their income they will pay in taxes.

Figures 26.3A-C show trends in tax rates for the "average" state, Kentucky, and the benchmark states for the years 1984 to 1994. For corporate and individual income tax rates, the figures show the top marginal rate. For most states, the top bracket is reached at a very low income ($8,000 for individual income in Kentucky), so most income is taxed at the top rate. These figures suggest that for both Kentucky and the nation, there have been relatively minor changes in tax rates during this period. As more and more states have instituted a general sales tax, the average rate has increased (Figure 26.3B). While the top tax brackets for the corporate income tax rate have increased somewhat over the nation (Figure 26.3A), the top rate has fallen for the individual income tax (Figure 26.3C). These figures also suggest that Kentucky seems to be, for the most part, relatively typical, though as Figure 26.3A suggests, its corporate income tax rate is above the national average and that of most surrounding states. While Kentucky's sales tax rate is above the national average (this includes states with no sales tax) it is not very different from other states in the region (see Figure 26.3B). Finally, Kentucky is at the national average in individual income tax rates, but potential competitors Indiana (with a top rate of 3 percent) and Tennessee (with a tax only on certain interest income) are very low tax states.

FIGURE 26.3A
Trends in Corporate Tax Rates, 1984-1994

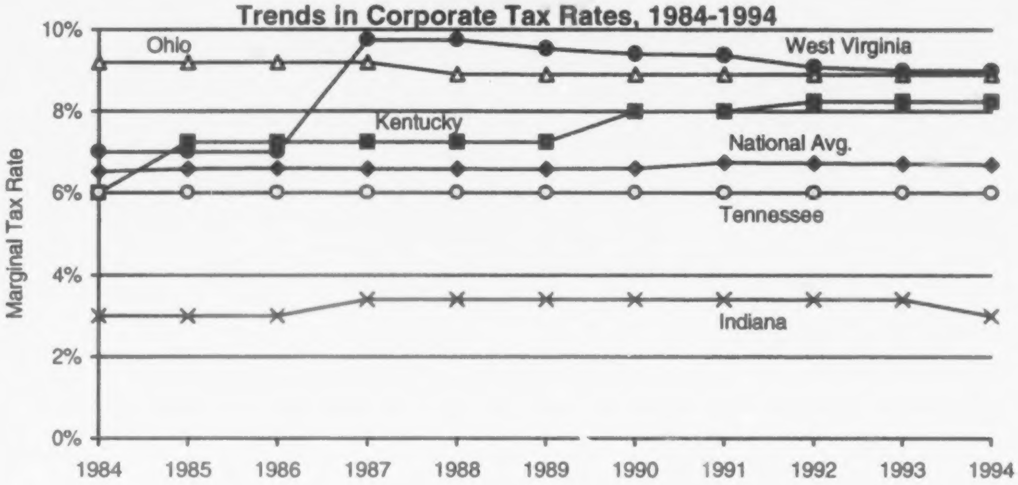


FIGURE 26.3B
Trends in State Sales Tax Rates, 1984-1994

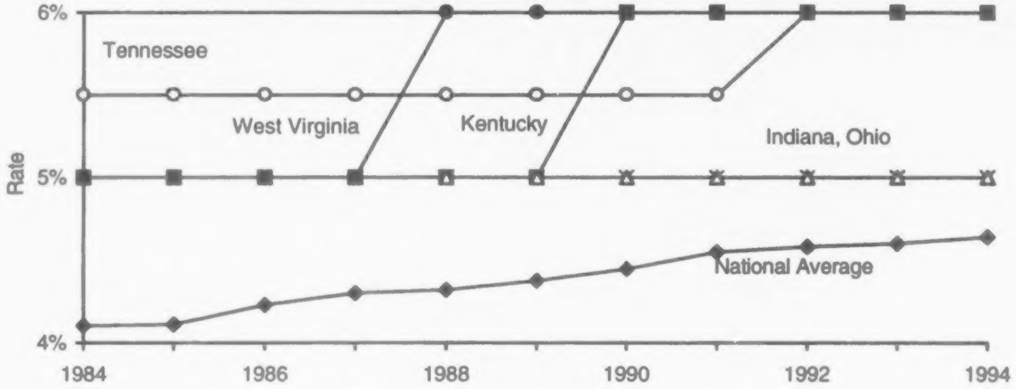
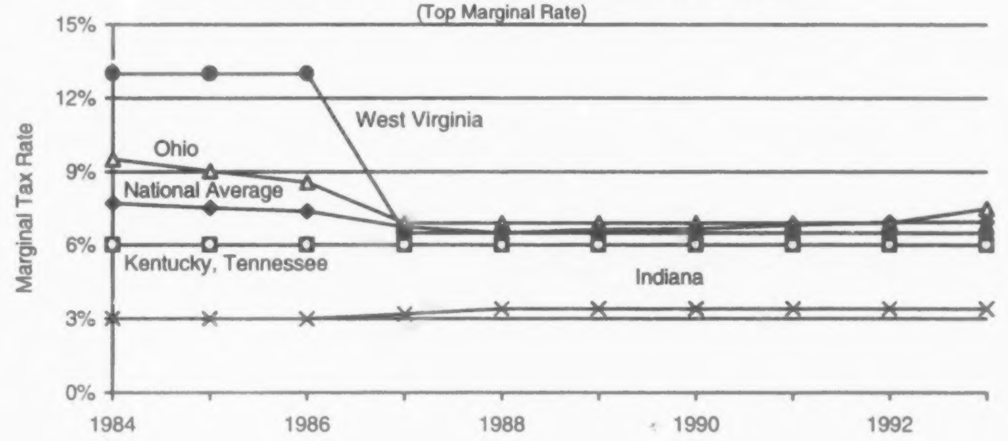


FIGURE 26.3C
Trends in Personal Income Tax Rates, 1984-1994
(Top Marginal Rate)



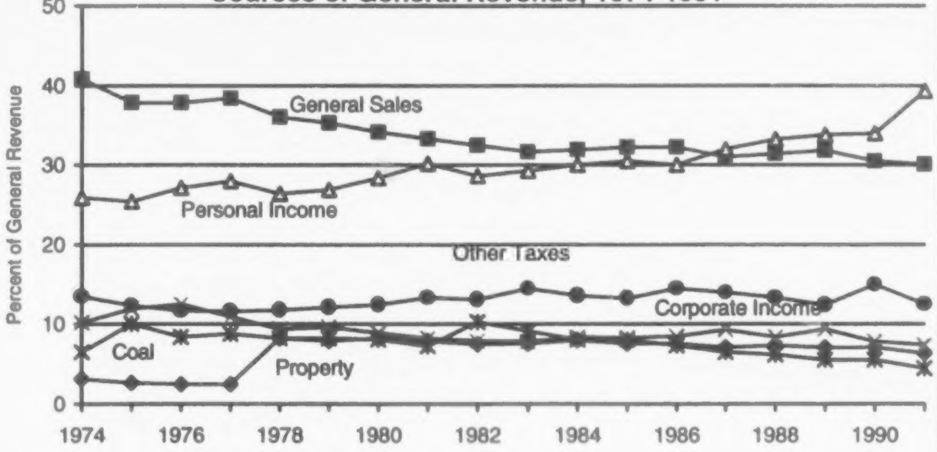
Source: ACIR

Finally, while the emphasis here is on taxes, we should note that comparing states based on any measure of taxes does not give a full picture of how the state (and local) government contributes to economic growth in a state. Tax revenue is being used to finance numerous government programs and services, including education from state general revenue. To the extent that residents value these services, taxes must be considered in conjunction with services.

Trends in Kentucky Taxation

Figure 26.4 shows the percentage of general revenue collected from the general sales, individual income, corporate income, and coal tax from 1974 to 1991. The most pronounced change that occurred in the way tax revenue was generated in Kentucky during the 1970s and 1980s was the switch from the general sales tax to the individual income tax as the state's primary source of revenue. From 1974 to 1991 the general sales tax was reduced from over 40 percent of general revenue to approximately 26 percent, while the trend was essentially reversed for the individual income tax. It should be noted that these trends occurred despite no changes in either the individual income or general sales tax rates and only limited changes in their bases. The role of the general sales tax was diminished because of economic conditions that determine its base, as will be discussed later.

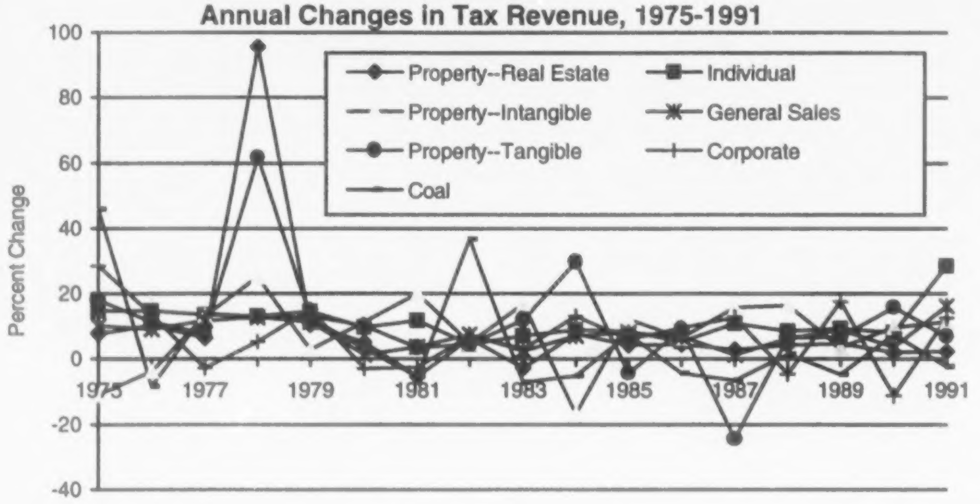
FIGURE 26.4
Sources of General Revenue, 1974-1991



Source: Kentucky Finance and Administration Cabinet

One reason we might be concerned about the diminished role of the general sales tax is illustrated in Figure 26.5, which shows the year-to-year variability in tax revenue for the four major sources of tax revenue for the general fund in Kentucky. Strict budget limitations (limited rainy day funds and deficit financing) require short-run stability in tax collections. As Figure 26.5 illustrates, the coal and corporate income taxes are unstable sources of revenue, with revenue from these sources varying dramatically from year to year. Most of this variation in revenue has been due to changes in tax bases, not tax rates. Clearly, sound tax policy suggests that reliance on these taxes as a source of revenue should be limited as they are unreliable and unpredictable sources of revenue.

FIGURE 26.5
Annual Changes in Tax Revenue, 1975-1991



Source: Author's calculations of data from the Kentucky Finance and Administration Cabinet

As Figures 26.4 and 26.5 indicate, the two primary sources of general revenue, the individual income and general sales tax, have had dramatically different trends over the past 20 years. The average increase in sales tax revenue was 10 percent during the period of 1976 to 1994 and only 7 percent for the individual income tax.[3] However, while the average increase in sales tax revenue was higher than the increase in the individual income tax, the percentage increase in sales tax revenue has been decreasing while the increase in individual income tax revenue has remained relatively constant over the past 20 years. Between 1975 and 1985, sales tax revenue increased by 10.3 percent per year while between 1986 and 1994 it increased by 9.7 percent even with an increase in the sales tax rate in 1991. In fact, over the past 20 years, the increase in sales tax revenue has been diminishing by almost .5 percent per year.[4] Given that the average increase in tax revenue was 10 percent per year during this period, this is an average reduction in additional revenue of 5 percent per year.

Why is the Sales Tax Base Diminishing and Why Should We Care?

Efficiency and Taxation. One of the first principles of designing an "optimal" or efficient tax system is to make the tax base as broad as possible. The greater the tax base, the lower the tax rate necessary to raise the desired amount of revenue. Because tax rates distort prices, creating a "wedge" between the price paid by the consumer and that received by the producer, this creates an inefficiency or "deadweight loss." At the efficient level of production of a good or service, everyone who is willing to pay a price high enough to cover the cost of producing the good should receive it. However, with a tax, the consumer now would have to pay a price that covers both the cost of the good and the tax; thus the consumer may not purchase a good for which she is willing to pay at least the cost of the good but not the cost of the good and the tax on it. For example, suppose that a hamburger costs $1.00 to produce (including all costs except taxes) and some consumer is willing to pay $1.03 for it. Then the consumer will purchase the hamburger. However, if a tax of 6 percent increases the cost to $1.06, the consumer will not be willing to buy the hamburger. This is inefficient—people are unwilling to pay more for a good (the hamburger) than the cost of producing it. It should have been produced and purchased, but was not.

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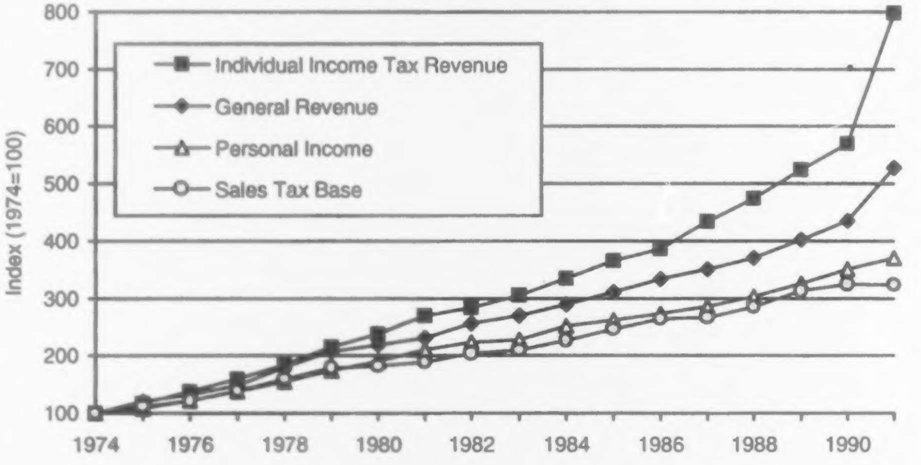
[3] Author's calculations based on data from Kentucky Finance and Administration Cabinet (various years). *Comprehensive annual financial report.* Frankfort, KY: Author.

[4] From Cochrane-Orcutt estimates of the change in sales tax revenue ($\log(\text{sales revenue})_t - \log(\text{sales revenue})_{t-1}$) on time and a dummy for 1991 to control for the changes in revenue due to the rate increase. Results available from the author.

What is particularly relevant for the general sales tax is that the inefficiency created by taxes, deadweight loss, increases dramatically with the sales tax rate. Doubling the tax rate will increase deadweight loss by a factor of four.[5] The implication of this exponential increase in inefficiency with an increase in the tax rate is that by broadening the tax base to keep tax rates lower, we can lower tax rates and dramatically reduce deadweight loss. For example, if we were to double the general sales tax base and lower the tax rate from 6 percent to 3 percent, we might expect deadweight loss to decrease by 50 percent.[6]

Why the Diminishing Sales Tax Base? Table 26.1 shows the sales tax base relative to personal income. The revenue base for the sales tax has decreased from 47.5 percent of personal income in 1977 to 38.1 percent of personal income in 1992. If the sales tax base in 1992 had remained at 47.5 percent of personal income, additional tax revenue of $345 million would have been collected. Alternatively, a tax base of 47.5 percent of personal income would have allowed the state to raise $1,411 million (1992 sales tax revenue) with a rate of 4.8 percent rather than 6.0 percent. Figure 26.6 shows how growth in the sales tax base has lagged behind both individual income tax revenue collections and growth in personal income.

FIGURE 26.6
Relative Changes in Individual Income Tax Revenue, Total Personal Income, General Revenue and Sales Tax Base, 1974-1991



Source: Kentucky Revenue Cabinet and Bureau of Economic Analysis

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[5] Formally, deadweight loss or excess burden is approximated by $DWL=.5\varepsilon t^2 pQ$ where ε is (compensated) price elasticity, t is the (ad-valorem) tax rate and pQ is revenue from the sale of the good being taxed.

[6] This assumes that the price elasticities are the same for the goods currently being taxed and the goods (and services) that would be included in the expanded tax base.

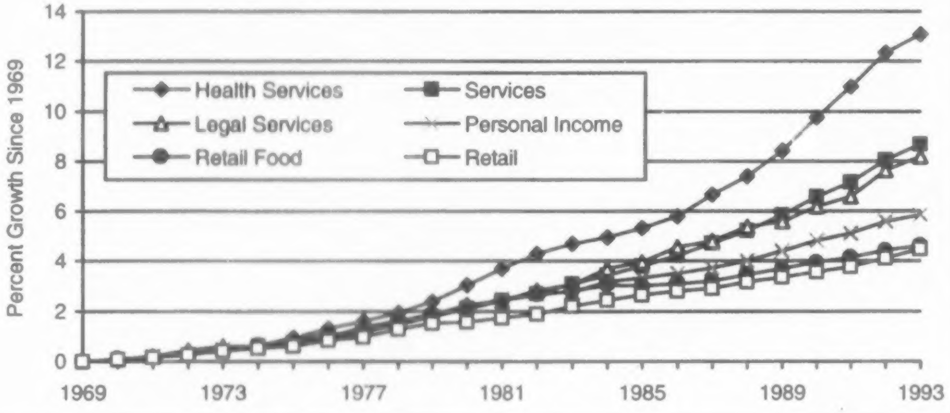
TABLE 26.1
Kentucky Sales and Use Revenue Base and Personal Income

	1977	1982	1986	1992
Revenue Base ($mil)	10,166	13,850	17,876	23,520
Tax Rate	5%	5%	5%	6%
Total Revenue	508.3	692.5	893.8	1,411.2
Personal Income ($mil)	21,426	34,518	42,342	61,697
Base as % of Income	47.45	40.12	42.22	38.12

Source: Kentucky Revenue Cabinet Annual Report and Statistical Appendix, from 1975/76-1991/92

In the past 15 years, much has been said about the impact of moving from an economy based on manufacturing to a service-based economy. While most of the discussion on this issue relates to employment, the shift from a manufacturing economy to a service economy has also dramatically changed the nature of the sales tax. As the general sales tax in Kentucky is primarily on tangible goods and services, as people have been spending a smaller percentage of their income on these goods and more on personal services, the sales tax base relative to income has decreased dramatically. Figure 26.7 contrasts growth in receipts on all services, health services, and legal services, to growth in personal income and growth in retail and retail food receipts. As the figure suggests, services, which are mostly untaxed, have been growing at a faster rate than personal income, while taxed retail goods have grown much more slowly. As a result of not including a large number of services in the tax base, the tax base relative to personal income has significantly diminished in the past 20 years. Table 26.2 gives a more detailed breakdown in the growth of service receipts over the past 20 years.

FIGURE 26.7
Growth in Services and Retail Industry, 1969-1993



While some of the services listed in Table 26.2 are taxed, many are not. Table 26.3 lists the sales tax base for Kentucky based on the Advisory Commission on Intergovernmental Relations (ACIR) classification of services. As this table suggests, most services are exempt from the sales tax, particularly in personal, business services and professional services as well as repairs. Generally, Table 26.3 suggests that Kentucky lags behind other states in taxing services even though most states make little attempt to tax services other than utilities and amusements.

TABLE 26.2
Receipts For Services, 1977, 1982, 1987, and 1992

Business Classification	Receipts, $1,000,000				Percentage Change	
	1977	1982	1987	1992	1977-1992	1982-1992
Personal Service	217.9	300.4	413.7	580.0	166	93%
Business Services	282.3	579.2	916.3	1,648.4	484%	185%
Repair Services						
Automotive Services	180.7	287.8	450.5	722.0	300%	151%
Amusement	150.1	216.4	329.5	525.0	250%	143%
Health, Except Hospital	---	1,164.8	2,443.0	4,119.0	---	254%
Professional Services						
Legal Services	150.5	271.7	459.1	728.7	384%	168%
Engineering And Accounting	183.9	319.8	450.9	975.0	430%	205%
Social Services	49.8	68.2	93.1	133.3	168%	96%
Total Receipts	1,399.1	3,528.1	6,007.0	10,378.0	642%	194%

Source: Bureau of the Census

As discussed earlier, broadening the tax base would enable us to decrease tax rates. Consider the impact of adding health and professional services to the tax base. Combined receipts for these services were $1,703.7 million, compared to $2,350 million in the 1992 tax base. Adding these services to the tax base could increase it by 72 percent. With this significantly expanded tax base, the tax rate could be reduced from 6 percent to 3.4 percent. Again, reductions in rates of this magnitude would significantly reduce the inefficiencies associated with the sales tax.

TABLE 26.3
Tax Base for the General Sales Tax

	No. of States Exempting	Kentucky
Food	26	Y
Non-Prescription Drugs	8	N
Telecommunications	8	N
Residential Utilities	31	Y
Personal Services	28; 7 limited	Y
Hotels and Lodgings	8	N
Custom Computer Programs	31	Y
Contractors	3	Y
Repairs	14	N
Sales of Materials to Manufacturers	45	Y

Source: ACIR

TABLE 26.4
Personal Services Taxed, 1992

Service Category	No. of Services in Category	Number Taxed in KY	Median Number Taxed in US
Utilities	16	10	8
Personal Services	20	1	4
Business Services	34	4	6
Computer Services	6	0	2
Admission/Amusement	14	7	10
Professional Services	8	0	0
Fabrication, Repair	19	3	5
Other Services	47	1	6

Source: ACIR

The Implication for Policy: Expand the Base, Not the Rate. If trends in both general expenditures and sales tax base continue, with general expenditures increasing at a rate equal to or exceeding the growth in personal income and the sales tax base growing more slowly and its growth rate declining, current tax rates will not be able to provide sufficient revenue. The inability of current tax rates to continue to provide sufficient tax revenue in the future is referred to as a *structural deficit*. One remedy is to increase rates on the current tax base while another is to increase the sales tax base by expanding the taxation of services. Expanding the taxation of services instead of increasing the rate on our current base is a preferred course of action for two reasons. First, the inefficiency generated from the additional revenues will be lower because higher tax rates, as discussed earlier, lead to much greater increases in inefficiency. Second, by including more of the consumers' spending in the tax base, we will have a tax base that should not diminish over time and should keep better pace with both personal income and general spending by the state. In addition, we might expect the short-run stability of the tax base to increase. Finally, by having a tax base for which growth mirrors personal income, we, in some sense, place revenues on automatic pilot and eliminate the politically costly consideration of future tax increases.

While expanding the tax base to include services might make economic sense, evidence from the attempts of both Kentucky and other states to expand their sales tax base to include services, particularly professional and business services, indicates it may not make political sense. Kentucky has failed in at least two notable attempts to tax services: in 1990, unsuccessful attempts were made to tax business services, and the health care provider tax enacted in 1990 has been repealed. Other notable failures to tax services include Florida's and Massachusetts's short-lived taxes on professional services in the late 1980s. The most controversial aspect of these service taxes is the taxation of professional services used by businesses. In the case of Florida, the major opposition to the tax arose from the legal and advertising community.

In addition to the obvious political opposition the expansion of any tax can arouse, a good economic argument exists for concern about the taxation of business services. Taxing business services can lead to *tax pyramiding*—taxing intermediate goods (purchases of services by businesses) in addition to taxing the final product sold to the consumer. This tax pyramiding can lead to a distortion of relative prices of goods by essentially doubling the tax on goods that use taxable intermediate inputs. To avoid this double taxation, firms might increase in-house provision of services such as accounting and legal services, which is likely to be inefficient if done to avoid taxes. Thus, there is some economic sense in allowing the purchases of services as well as tangible products by businesses to be exempt from the sales tax and to tax only services and tangible goods purchased by consumers.

Another concern related to the expansion of the sales tax base, particularly to business services, is whether these businesses will be at a competitive disadvantage relative to businesses in states that do not tax these business services. For example, if Kentucky were to tax advertising services, Kentucky firms might seek advertising services from Cincinnati or Nashville. In addition, out-of-state firms currently using Kentucky business services might choose to use untaxed services in a state that does not tax the service.

Florida addressed this problem by exempting out-of-state sales of business services from the sales tax and by requiring Florida users of services from out-of-state firms to pay a use tax on these services. Two difficulties with this solution were that it was difficult to apportion service revenues to a specific state for services used in both Florida and other states and it was difficult to collect the use tax from Florida residents using out-of-state services.[7]

It is worth noting that this same argument about reducing the competitiveness of Kentucky business can, and was in the case of health care providers, be made about consumer services and purchases. Undoubtedly there will be some loss of business in Kentucky if it expands its tax on consumer services and surrounding states do not. However, it seems much less likely that residents would "shop around" to find states where they could avoid sales taxes, particularly on health services which are primarily paid for by third-party payers.

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[7] In fact, Kentucky has the same tax on the use of out-of-state purchases of goods or services that are liable to Kentucky's tax.

Principles of tax analysis, particularly those related to the inefficiency associated with taxation, as well as the changing patterns of consumption, both argue for the expansion of the sales tax base to services. The advantages of broadening the tax base include increased revenues while avoiding tax rate increases that lead to substantial increases in inefficiencies. In addition, an expanded sales tax base should become a more reliable source of revenue—both more stable and more likely to keep pace with personal income.

Conclusion

In general, Kentucky is a relatively typical state in its tax structure, with its tax rates similar to most states, though perhaps having higher rates than its surrounding neighbors. The major difference between Kentucky and other states is the much lower share of local taxes in the total of state and local taxes, as well as Kentucky's greater reliance than most states on its individual income tax for general revenue.

Kentucky's reliance on the individual income tax does not appear to be a design strategy; instead it is the result of the shift from a manufacturing- to a service-based economy. The result of the combination of this shift in the economy and Kentucky's narrow sales tax base has led to sales tax revenue failing to keep pace with total revenue. To provide stability and avoid higher, inefficient tax rates, the sales tax base should be broadened to include personal services.

$5.8 Billion and Change: An Exploration of Long-Term Budgetary Trends

Over the past 20 years, the share of general fund dollars spent on police and corrections, and health and human services, has increased. Meanwhile, the share spent on higher education has fallen. These trends are expected to continue over the next decade. Overall, revenues will not grow fast enough to maintain the current level of services, if current trends continue. Also, the rainy day fund is not well protected. Kentucky should strengthen funding and spending guidelines for the rainy day fund, improve its investment in education, keep the spirit of reform alive, and change the state tax structure.

By Peter Schirmer, Michael T. Childress and Charles C. Nett
Kentucky Long-Term Policy Research Center

Governments at all levels are feeling squeezed between limited resources and seemingly limitless pressures to increase spending, but it was not always this way. Just 30 years ago, when the U.S. economy was robust and expanding, the national debt was much smaller, there were more workers per Social Security recipient, and programs such as Medicare and Medicaid were in their infancy, economists worried about a drag on the economy resulting from public revenues growing faster than public expenditures.[1] In the 1960s, governments had "structural surpluses." Today, governments have "structural deficits."

A structural deficit is not a single-year shortfall, which might occur as the result of an unforeseen natural disaster, a new mandate from the federal government, or a sluggish economy. Rather, a structural deficit is a long-term crisis; it occurs when revenues are projected to consistently grow more slowly than expenditures over several years. Because many states cannot actually run a deficit, certain expenditures may be neglected, sometimes for years, in order to balance the books.

Does Kentucky have a structural deficit? Will the current revenue structure (consisting of various taxes, fees, investments, and governmental transfers) be able to support the current level of services in coming years, or will spending cutbacks be necessary in order to maintain a balanced budget? This report suggests that Kentucky does, in fact, have a structural deficit.

Our claim is based on projected revenues and expenditures through fiscal year (FY) 2004. The revenue projection simply assumes that, without any major changes to the tax structure, general fund revenues will grow at the same rate as personal income—a rather generous assumption given recent growth rates and tax cuts. But this report focuses on expenditures and the possible impact that a variety of trends may have on state spending during the next decade. Of course, no one knows for sure how fast technology will improve or whether the poverty rate will increase or decrease. We cannot be certain that managed care will yield the expected savings for Kentucky's Medicaid system or that the prison population will continue to grow as rapidly as it has in the past. But we can make reasonable assumptions about how these things might change, and how they might affect expenditures.

On the other hand, we assume the quality of state services *will not* change. In other words, the state will not add new restrictions on Medicaid coverage, it will not increase or decrease police protection, it will continue to give its children as good an education as they receive today, etc. We are essentially asking, "With the changes taking place in society, the economy and the populace, how much money will Kentucky need to spend 10 years from now in order to give its citizens the same quality of services they receive today?" The answer is, "More money than we'll have."

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[1] Giertz, J. F., McGuire, T., & Nowlan, J. (1995). *The Illinois structural deficit dilemma: the growing gap between state expenditures and revenue realities.* Champaign-Urbana, IL: University of Illinois, Institute of Government and Public Affairs.

Future Revenues and Expenditures

We project expenditures to grow approximately 6 percent a year through FY2004, compared to 5.3 percent annual growth for revenues. The difference may not seem like much, but at this rate, expenditures would grow 79 percent between FY1994 and FY2004, while revenues would only grow 67 percent. Even starting with a surplus in FY1994, we project that expenditures will exceed revenues by more than 4 percent in FY2004. This deficit will exist only in theory because in practice spending will have to be less than revenue.

Overall, general fund spending is growing faster than general fund revenue, but not all expenditures are increasing at the same pace. If we divide state spending into functional categories—primary and secondary education, higher education, police and corrections, health and human services, highways and all other—we find that Kentucky's investment in education is growing slower than spending on prisons and health care:

- In our projections, health and human services spending experiences the sharpest increase. We project this function's share of general fund revenues to rise from 18.3 percent in FY1994 to more than 25 percent in FY2004.
- Police and corrections spending rises from 5.3 percent of general fund revenues to more than 6.5 percent.
- Primary and secondary education spending as a percentage of general fund revenues is essentially unchanged.
- Higher education's share of general fund revenues falls from 14.5 percent in FY1994 to less than 13 percent in FY2004.
- Highway spending is financed by the transportation fund, not the general fund, and so is not included in the forecast. But transportation fund revenue is nearly stagnant and real spending is less than it was 20 years ago.
- All other spending slips from 12.6 to 12.1 percent of general fund revenues.

FIGURE 27.1

A Structural Deficit: Spending Outgrows Revenues

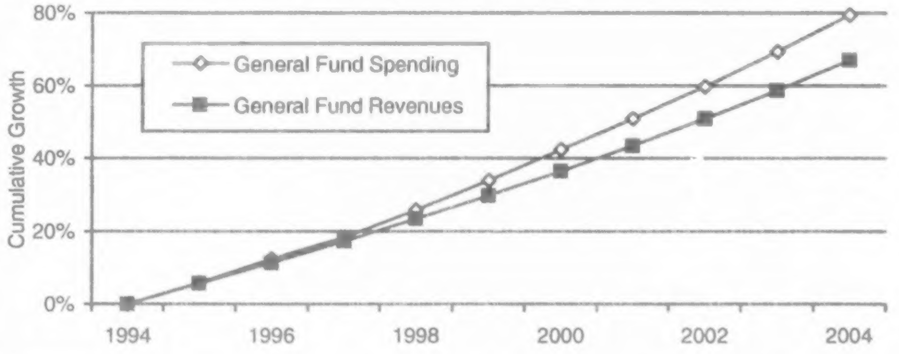
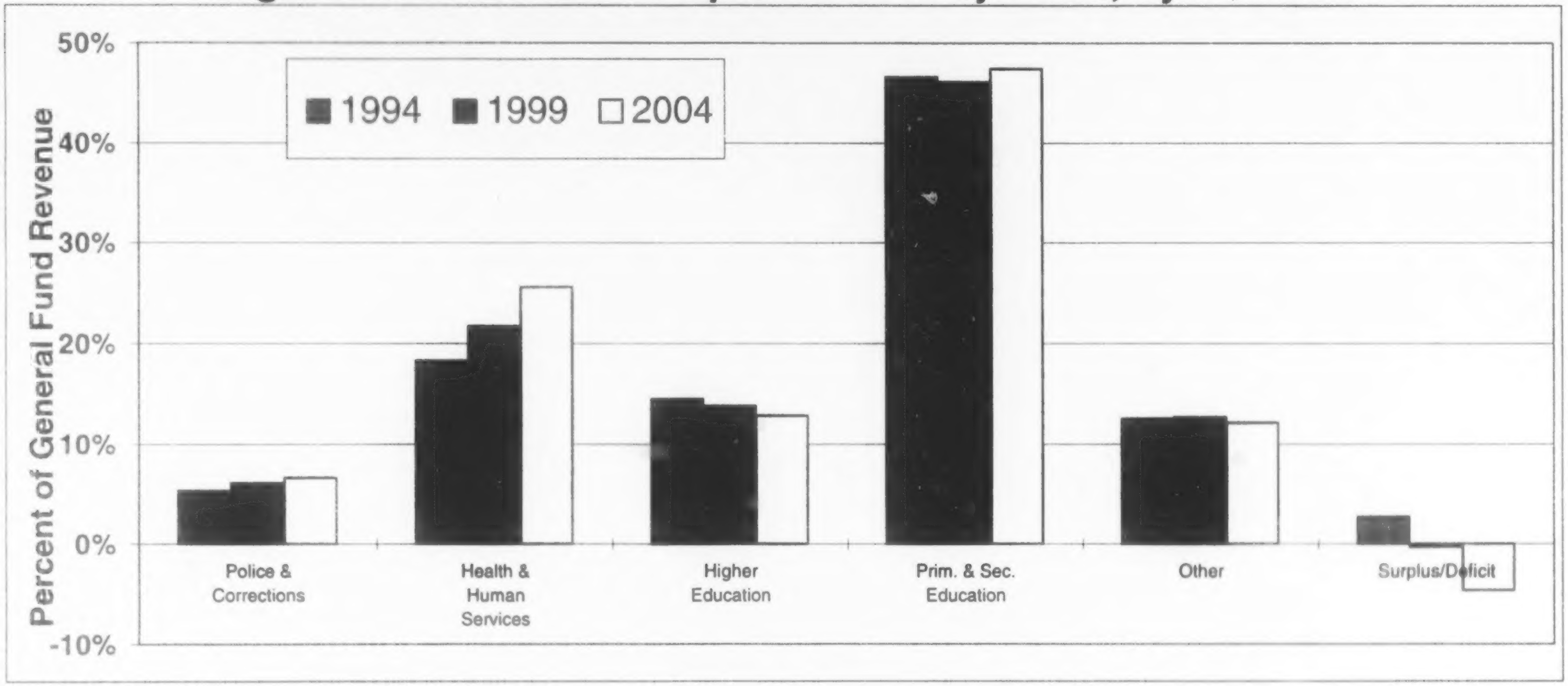


Figure 27.2: Baseline Expenditure Projection, by Function



Source: Kentucky Long-Term Policy Research Center

	Police & Corrections	Health & Human Services	Higher Education	Prim. & Sec. Education	Other	Surplus or Deficit
1994	5.3%	18.3%	14.5%	46.5%	12.6%	2.7%
1999	6.1%	21.7%	13.8%	46.1%	12.7%	-0.4%
2004	6.6%	25.6%	12.9%	47.4%	12.1%	-4.6%

Of course, a healthy populace and a safe society are essentials of a high standard of living. Yet we contend that the best (not to say the only) way to cultivate a high standard of living for future generations is by increasing Kentuckians' knowledge, abilities and talents—the paramount goal of the education system.

Our baseline projection of general fund spending for different functions of government is illustrated on the preceding page. Note the general fund "deficit" of 4.6 percent in FY2004. We are not actually forecasting that Kentucky will have a deficit because it is prohibited by law. Rather, this shows that spending is growing at an unsustainable rate, given the current tax structure and our assumptions about a variety of factors.

Alternative Scenarios

We have already noted that the revenue and expenditure projections assume that the tax and spending structures will not change in the coming years. But what if we were to make a change? What if, for example, Kentucky decides that its spending for education is too low compared to other states and should be increased? Or what if the federal government changes its Medicaid funding policy? Our budget model allows us to change a variety of factors which can create alternative budget scenarios. In this chapter, we explore four alternatives to our baseline forecast:

- An expanded commitment to higher education
- An expanded commitment to primary and secondary education
- A change in federal Medicaid spending
- A recession

The budget projections based on these alternative scenarios do not pinpoint the exact amounts by which expenditures or revenues will change. Rather, they illustrate the magnitude of the impact these events *might* have on the budget.

The "expanded commitment to higher education" scenario includes a gradual increase in both spending per student and college enrollments to meet the regional averages by FY2004. Our analysis suggests that spending for higher education would grow nearly 90 percent between FY1994 and FY2004, compared to a 50 percent increase in the baseline projection. The total additional cost of the expanded commitment to higher education could be more than $1 billion over 10 years. If spending for other functions is unchanged from the baseline levels, higher education spending could exceed 16 percent of general fund revenues, and total spending for all categories would then exceed revenues by more than 8 percent.

In the "expanded commitment to primary and secondary education" scenario, we look at the cost of raising state and local expenditures per pupil to match the regional median. Even assuming local governments bear their share of the increase, we project a huge additional cost—$1.8 billion cumulative—and a deficit of more than 9 percent of general fund revenues in FY2004. In this scenario, spending for primary and secondary education is projected to grow 87 percent between FY1994 and FY2004, compared to a baseline increase of 70 percent.

One of the most contentious items of the federal budget debates of 1995 was Medicaid. Congress considered a variety of proposals to reduce federal spending over several years. One bill would have given Kentucky about $13.3 billion for Medicaid between FY1996 and FY2002. The Urban Institute in Washington projected that this plan would have cut Kentucky's federal Medicaid revenues by about $4.3 billion between FY1996 and FY2002; Kentucky's Cabinet for Health Services projected a reduction totaling about $3.4 billion. Our estimate is that the state would lose roughly $700 million by FY2002 and $2 billion by FY2004. The Urban Institute and the Cabinet for Health Services project gloomier scenarios than we do (because of different assumptions about baseline spending), but even using our estimates, the state could have a general fund deficit of nearly 14 percent by FY2004, and health and human services spending could amount to more than one-third of all general fund revenue, if we are to maintain the quality of services in the Medicaid program.

We look at a recession scenario to demonstrate the importance of the rainy day fund. This fund supports state spending in lean years when slow economic growth leads to slow revenue growth. While our analysis projects expenditure growth to increase slightly during a recession (we chose 2002 as the year for the recession), it also projects revenue growth to slow to only about 1 percent, compared to 5 percent growth in the baseline forecast. Instead of a baseline deficit of 3 percent in FY2002, the slow revenue growth could create a deficit of more than 5 percent.

Recommendations

Many trends are largely outside the province of policymaking, particularly at the state level. If Kentucky is to maintain—let alone improve—the quality of services it currently provides, it must be proactive in managing the trends affecting spending. The state must develop and adopt strategies for strengthening its financial outlook in years to come. We offer four recommendations:

- Take stronger measures to ensure that the budget reserve fund is adequately funded and adequately protected.
- Keep alive the spirit of the Governor's Commission on Quality and Efficiency by searching for new ways to cut costs and improve efficiency.
- Be diligent in finding opportunities to improve our investment in the future through education.
- Ensure that our tax structure provides adequate revenues for state programs.

Strengthen the Budget Reserve Fund. The current provisions for funding Kentucky's budget reserve fund are rather weak; the reserves cannot exceed 5 percent of actual general fund receipts, and any deposits made to the fund out of excess revenues are made after the state implements its surplus expenditure plan, if it so chooses. Protection of the reserve fund is even weaker—reserve funds may be appropriated at any time by the General Assembly. It's like saving money by putting it into your wallet instead of the bank. In the absence of a sound budget reserve fund, the budget effects of a recession could be brutal.

Keep Reform Alive. In its 1994 report, the Governor's Commission on Quality and Efficiency examined past budgets and noted that Kentucky has suffered budget shortfalls in 9 of the last 12 budget cycles and 4 of the last 7 years. In our report, we predict that budget shortfalls will continue to be a way of life, funds will not be available to make an expanded commitment to education, and a recession or a change in federal Medicaid policy would require severe spending cuts. Whether the Commission studies the past or we gaze into the future, the conclusion is the same: in the words of Jim Gray, chairman of the Commission, "We must change the way we manage our government."

Improve and Invest in Education. Perhaps nowhere is innovation and increased efficiency more urgent than in education. Compared to similar states, Kentucky spends less money per student at all levels of the education system. And while we are closing the spending gap at the primary and secondary level, the gap in higher education spending is widening. The Southern Regional Education Board reports that among 15 Southern states, Kentucky had the largest decrease in education funding per college student over the last 10 years. We estimate that Kentucky would have to spend an additional $1 billion over the next decade just to match median spending on higher education by our benchmark states.

While it is beyond the scope of this report to examine possible education reforms in much detail, we will note that various experts have criticized the higher education system in Kentucky for duplication of services, "turf fights," and lack of coordination, all of which decrease efficiency. To increase efficiency, businesses and other private associations might share in the costs and planning of higher education. And clearly, any substantial commitment of new state resources to higher education must be accompanied by closer collaboration among institutions and the different agencies responsible for post-secondary education.

Change the State Tax Structure. As with education reform, we will not offer many specific recommendations on tax policy. Others have done that for us. In a study by University of Kentucky professor William Hoyt, the extensive and detailed work of the Kentucky Commission on Tax Policy, and the analysis of others who have looked at this issue, we have numerous recommendations for changes in the state tax system.[2] (We should note that the Commission on Tax Policy had no authority to enact any of the changes it recommended.) In the absence of tax reform, it seems clear that revenues will not keep pace with expenditures, and state services as they now exist will be compromised. It is highly unlikely that Kentucky will be able to expand its commitment to education (or, for that matter, other kinds of workforce training, economic development or environmental protection) if expenditures and revenues continue along their current paths.

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[2] See Hoyt's chapter in this volume, and Kentucky Commission on Tax Policy. (1995). *Final report*. Frankfort, KY: Author.

Trends in Civic Participation

Voter participation in Kentucky lags behind the national average in recent elections for several reasons, including income and education levels, lack of political competition and a political culture that tends to tolerate corrupt practices. The "motor voter" act has increased registration, and party competition is rising, but these trends may be negated by lack of citizen confidence in political actors and institutions. But voting is not the only means of participating in civic affairs. Many people donate time and money to charity, and they participate in school boards and other community organizations. Communities with such active, engaged citizens will enjoy a brighter future. As we look long term, one of the most important challenges we face is that of providing effective citizenship education.

By Paul Blanchard
Eastern Kentucky University

In *The Context of Change*, the authors noted that voter participation in Kentucky has lagged well behind the national average in recent elections.[1] This has been true of presidential elections as well as elections at other levels. For example, in the highly significant election of November 1994, when Kentucky Republicans captured two long-time Democratic congressional seats, only 39 percent of eligible voters cast their ballots.[2] In the May primary elections in both 1994 and 1995, voter turnout rates were even lower. And while voter turnout for the November 1995 gubernatorial election exceeded expectations,[3] it was still far less than 50 percent.

What are some of the reasons for low voter turnout and declining citizen participation in Kentucky? My observations over the last 20 years lead me to conclude that, like citizens in other states, many Kentuckians have lost confidence in political leaders and political institutions. They react unfavorably to negative campaigning, and they view elected officials as being unable and/or unwilling to fulfill the promises they make to voters. These perceptions are often inaccurate. Much evidence indicates that most politicians represent their constituents effectively and, to a large extent, actually do what they have promised. But this does not diminish voter perceptions as disincentives to participation.

Other factors peculiar to Kentucky help explain our low levels of participation, especially in comparison to other states. As Jewell and Cunningham pointed out in their study of Kentucky politics in the late 1960s,[4] voter turnout rates in our state have been below the national average since the 1930s. Much of this difference can be explained by Kentucky's relatively low income and education levels. We rank low in voter turnout, as do other poor states with high levels of high school dropouts.

But there are still other, more specific reasons why citizen participation in Kentucky has been so low. "Voter fatigue" is one problem. In Kentucky, we expect citizens to vote twice every year, often for dozens of candidates running for a large number of apparently meaningless offices at both the state and local levels. This situation tends to lower the interest level for any given election and depletes the "political energy" of average citizens who have limited time and resources to devote to researching candidates and issues. One encouraging development in Kentucky is that, beginning in 1997, we will have one year during a four-year cycle (1997, 2001,

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[1] Smith-Mello, M. and Schirmer, P. (1994). *The context of change.* Frankfort, KY: Kentucky Long-Term Policy Research Center.

[2] Smith-Mello, M. (1996). Community, trust key to our economic and social future. *Foresight* (Kentucky Long-Term Policy Research Center), 3, 2-3.

[3] Smith-Mello, M. Community, trust key to our economic and social future.

[4] Jewell, M. E., Cunningham, E. W. (1968). *Kentucky politics.* Lexington, KY: University Press of Kentucky.

2005, etc.) when no elections will be held. But this is only one small step in eliminating the problem of voter fatigue.

Another contribution to low voter turnout is the lack of political competition in Kentucky. Even though Republicans do well in some elections, mainly for seats in the U.S. Senate and the House of Representatives, Kentucky has been and continues to be a Democratic-dominated state in most respects, especially at the local level. And while most Kentucky counties are dominated by Democrats, a fairly substantial number are dominated by Republicans. Since local politics are so important to so many Kentuckians, lack of competition at this level is a significant deterrent to participation. Furthermore, one-party politics often means entrenched political organizations and issueless campaigns, which discourage participation even more.[5]

A specific way that voter participation is discouraged in Kentucky is the limited time the polls are open on election day—from 6 a.m. to 6 p.m. This tends to create a hardship for those who work long hours or commute long distances to work. Given the economic situation at the end of the 20th century, the number of people in these categories is increasing.

Finally, Kentucky's political culture, which often tends to tolerate politically corrupt practices, from vote-buying to BOPTROT, leads to a pervasive sense of political cynicism in many citizens and discourages them from all types of political participation. The reaction of a Richmond, Kentucky, citizen, quoted in a recent *Courier-Journal* story on low turnout, is typical. Don Katzman said he hasn't voted in more than 30 years, primarily because the last time he went to the polls he left disgusted. "I saw votes being bought, and it just seemed to me that whoever had the money to do that was always going to win."[6]

Is Katzman's cynical attitude toward politics shared by others across the United States? Much has been written in recent years about the alienation and cynicism of Americans. In his well-known and important 1991 book, *Why Americans Hate Politics*, journalist E.J. Dionne argued that politicians and political parties in the United States have often presented Americans with false choices, based on outdated issues. This has resulted in what Dionne saw as legitimate anger, especially among middle-class citizens.[7]

Just how angry Americans are in 1996, and how that anger affects their willingness to vote, as well as to participate in other civic activities, is currently the subject of some disagreement among scholars and journalists. In an influential 1996 book by Susan J. Tolchin, *The Angry American: How Voter Rage is Changing the Nation*, the author discusses how economic changes, particularly those related to globalization, have ". . . engendered a new form of anger that relates to the public's feelings of injustice, betrayal and blame."[8] But presidential candidates Bob Dole and Ross Perot, who should have been able to take advantage of voter anger this intense, have been generally unsuccessful. When asked what happened to all the anger, one of Perot's pollsters responded, "Down about 20 points." Asked why, he responded, "The anger's been absorbed by an unrelentingly favorable economy." A Republican pollster, Frank Luntz, saw it slightly differently: "They're still angry but not spitting mad anymore. They're just not very interested. They got sick of politics a year ago, during the budget battle, and tuned out."[9]

Results from the 1996 elections in Kentucky reflect this rather ambivalent attitude toward political participation on the part of Kentuckians. The low voter turnout (58 percent of registered voters; 47 percent of voting age population—both lower than in 1992) can be interpreted in a number of ways. If Kentuckians were angry, their anger was not directed toward the president, who carried the state, albeit by a narrow margin. Nor was it directed toward incumbent members of Congress (except for the defeat of incumbent Democrat Mike Ward, who barely won in 1992), or Republicans. We cannot even conclude that the substantial numbers of Kentuckians who chose not to vote have withdrawn from other forms of civic participation. After all, one of the few studies of Kentucky non-voters described these individuals as active members of their communities:

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[5] Several of these issues are discussed in Blanchard, P. (1984). Political parties and elections. In J. Goldstein (Ed.), *Kentucky government and politics* (Chapter 7). Bloomington: College Town Press. See esp. pp. 149-166.

[6] Wilson, R. (1995, May 26). Reasons for low turnout went beyond apathy. *The Courier-Journal*, p. B1.

[7] Dionne, E.J. (1991). *Why Americans hate politics*. City: Publisher.

[8] This quote is an excerpt of Tolchin's book published in the *Lexington Herald-Leader*, October 20, 1996.

[9] The statements of both pollsters were discussed in Klein, J. (1996, November 4). Where the anger went. *Newsweek*.

> *. . . they tend to be involved in the communities and activities closest to their lives—church groups, school committees, even community organizations . . . When they invest time, money, and energy in organizations and activities closest to their everyday lives, they feel the returns are palpable and sense that they can concretely affect the course of actions that shape those policies and distribute those rewards.*[10]

We will return to this discussion of the relationship between voting and other forms of political participation later in this essay.

Given Kentucky's rather dismal track record of citizen participation, especially in terms of voting behavior, what can we project regarding future trends in this area? Are they likely to be positive, with increasing and more meaningful citizen participation, or negative, with "more of the same" or even declining, in terms of citizen involvement? As is so often the case, the answer includes both good news and bad news.

Much of the good news can be summarized in two words: "motor voter." Kentucky is one of the first states to have implemented the National Voter Registration Act of 1993 (NVRA), sponsored by Kentucky Senator Wendell Ford. NVRA is often referred to as the motor voter law because it allows citizens to register to vote (almost automatically) when they renew their driver's licenses. However, citizens can also register easily at convenient locations when attending to other routine governmental matters, such as applying for AFDC, food stamps, or Medicaid.

NVRA has contributed significantly to a hefty increase in the number of registered voters in Kentucky. More people registered to vote in 1995 (nearly 200,000) than ever before, and Kentucky set a record in November 1995, with nearly 2.25 million registered voters.[11] In terms of enhancing citizen participation, this increase is encouraging and significant, since failure to register is almost always one of the main reasons non-voters give for their decision not to vote. If current trends continue, and we expect they will, almost all Kentuckians will be registered to vote within just a few years.

Unfortunately, there are discouraging trends which result from examining the voter turnout among motor voter registrants. During the May 1995 primary, only 7 percent of them voted! This rate improved to about 18 percent in the general elections, but this was far below the statewide turnout of 44 percent. Further, turnout rates among certain categories of motor voter registrants were even lower, for example, 9 percent among AFDC clients, 10 percent for food stamp recipients, and 10 percent for Medicaid applicants.[12] Clearly, overcoming the registration barrier is much easier than getting people to actually vote.

Another positive trend affecting citizen participation is the increasing level of party competition in Kentucky which has been generated by a stronger and more competitive Republican party. Examples of this include the 1st and 2nd Congressional District victories, mentioned earlier, more Republicans in the General Assembly, especially the State Senate, the very narrow loss by Republican Larry Forgy in the 1995 gubernatorial election, and several local Republican victories across the state in traditionally strong Democratic areas. Political science research strongly suggests that there is a high correlation between party competition and voter turnout. Kentucky's recent past, most notably the turnout in November 1995, supports such conclusions.

Potentially, the most discouraging trend in the area of civic participation is the increasing lack of citizen confidence in political actors and institutions. How we deal with this problem will be critical to a healthy polity in the 21st century. Many of the suggestions for addressing this problem have revolved around attempts to "reconnect" citizens to their governments and to their communities. A national effort in this direction was spearheaded by a group known as Project Democracy, the National Commission for the Renewal of American Democracy. This group, made up largely of secretaries of state from around the country, worked for about four years (1992-1995). Their work culminated in September 1995, when their final report, accompanied by a workbook and an "idea book," were released nationally at a Citizens Participation Conference held at Eastern Kentucky University. Both the workbook and the idea book contain a wealth of ideas and strategies for more fully engaging citizens in the political process. Unfortunately, few individuals or groups have emerged to lead in the attempt to implement these ideas. One notable exception is the League of Women Voters of Kentucky.

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[10] Yanarella, E. (1992). *None of the above: Alienated citizens talk back.* Lexington, KY: CIVIC of Central Kentucky.

[11] Statements based on information compiled by George Russell, Executive Director of the Kentucky Board of Elections and other staff in the Secretary of State's office.

[12] Ibid. Comparable data for 1996 were not available as this essay was drafted.

During the September 1995 Citizens Participation Conference at EKU, conference participants (nearly 150) were given opportunities to suggest ways to engage citizens more effectively in their communities and in the political process. While hundreds of thoughtful and innovative ideas were suggested, those which seemed to be most meaningful and to have the greatest potential for success were in the area of citizenship education. As Michal Smith-Mello (the conference keynote speaker) has written recently:

> *Voter education is also key. The interest of everyday citizens in the details of policy options, budgets, and program outcomes has historically been underestimated. People are hungry for information and part of the challenge government faces is to make it broadly accessible in a range of formats, from town meetings to the Internet. Indeed, gathering and disseminating the information citizens need to make informed and thoughtful decisions is becoming a key government role.*[13]

Conference participants pointed out that while citizenship education is an important responsibility of elementary and secondary schools, this process is lifelong, and communities and community organizations must share in the responsibility for providing it.

Thus, one of the most important questions as we look at trends in civic participation in Kentucky at the end of the 20th century is: How effectively are schools and communities in Kentucky providing the kind of citizenship education that will produce active and engaged citizens? While the Kentucky Education Reform Act (KERA) seems to place a high priority on outcomes and activities that relate to "citizenship education," even the most informed Kentuckians are confused about what our schools are doing in this area. Greater discussion among educators, political leaders, parents, and other citizens is urgently needed to provide more information and clarity about what our schools are doing to produce more knowledgeable and effective citizens.

One organization that is addressing both of these concerns—citizenship education and declining confidence in the political process—is Kids Voting Kentucky. This program, which provides curriculum activities for students at all grade levels, has as a culminating activity the opportunity for students to vote on election day (on unofficial ballots) at the same voting precincts as their parents. Impressive results have been achieved, not only in increasing enthusiasm among school children but also in providing motivation for parents to participate. An encouraging trend in Kentucky is that Kids Voting, which began in Fayette County, is expanding in 1996 into five other counties—Bourbon, Clark, Harrison, Jefferson, and Woodford.[14]

As noted earlier, the topic of civic participation involves more than just voting. The two are not synonymous. We know that some citizens who choose not to vote do engage in other meaningful civic activities. What can we say about trends in these other forms of participation? At the national level, there is substantial disagreement about whether levels of civic and community engagement, often referred to as "social capital," are rising or falling. Harvard professor Robert Putnam, author of a very influential book on this topic, *Making Democracy Work*,[15] has cited substantial evidence to suggest that social capital in America is declining. He has pointed to decreasing numbers of Americans who attend meetings on civic matters, who work for a political party, who serve on a committee of a local organization, or who attend political rallies:

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[13] Smith-Mello, M. Community, trust key to our economic and social future.

[14] Information about Kids Voting Kentucky is available from its Executive Director, Marilyn Carter, at PO Box 1108, Lexington, KY 40589-1108.

> *By almost every measure, Americans' direct engagement in politics and government has fallen steadily and sharply over the last generation, despite the fact that average levels of education—the best individual-level predictor of political participation—have risen sharply throughout this period. Every year over the last decade or two, millions more have withdrawn from the affairs of their communities.*[16]

Putnam's pessimistic conclusions have been challenged, most notably by Everett C. Ladd, long-time director of the Roper Center for Public Opinion Research at the University of Connecticut. The Roper Center devoted 35 pages of its June/July 1996 magazine, *The Public Perspective*, to the topic: "A Vast Empirical Record Refutes the Idea of Civic Decline." In response to the Putnam quote cited above, Ladd wrote: "The data just don't show erosion of America's 'social capital.'" Data are cited to show that Americans are volunteering more time and money to worthy causes, are more likely than earlier to contact local officials, and are making campaign contributions in increasing numbers. In addition, increases were reported in Americans who have written to their member of Congress, who work with others on community needs, and who formed groups to help solve local problems.

What trends do we see in Kentucky relative to this academic debate about whether social capital is rising or falling? The little evidence that is available supports a fairly positive perspective. For example, the results of a recent statewide survey suggest that Kentuckians are more trusting and more engaged in the life of their communities than most Americans. Social capital cannot develop without high levels of trust, and a higher level of trust seems to exist among Kentuckians than among their counterparts in other states. The survey also revealed that, compared to other Americans, more Kentuckians participate in civic, community, charitable, or church-related activities.[17]

In commenting on these findings and their relationship to the national debate about social capital, Michael Childress, Executive Director of the Kentucky Long-Term Policy Research Center, made this observation:

> *The high levels of trust these survey results show are undoubtedly related to our strong sense of neighborliness in Kentucky. Today, research has offered us plentiful and convincing empirical evidence to demonstrate both a decline and an increase in social capital in the United States. What we're interested in learning about at the Center is the more important question of how social capital is formed and how it contributes to the development of communities.*[18]

In seeking answers to this "more important question," an excellent place to begin is in Owsley County, where a citizens' group, the Owsley County Action Team, was formed in 1992. Its mission is "to provide leadership to enable citizens to achieve self-empowerment, sustainable community development, and an enriched quality of life." The Owsley County Action Team is working with the Mountain Association for Community Economic Development (MACED) of

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[15] Putnam, R.D. (1993). *Making democracy work*. Princeton, NJ: Princeton University Press.

[16] Putnam, R. D. (1995, January). Bowling alone: America's declining social capital. *Journal of Democracy*, 6, 67.

[17] The survey was commissioned by the Kentucky Long-Term Policy Research Center (KLTPRC) and conducted by the University of Kentucky Survey Research Center. The findings are reported in a KLTPRC news release dated August 1, 1996.

[18] KLTPRC news release cited above.

Berea and its Sustainable Communities Initiative. According to Jeanne Gage, Director of the Sustainable Communities Initiative, a "sustainable community" is:

> *. . . a thriving community, one which will prosper over the long term. Sustainable communities have developed the basic relationships necessary to bring individuals and organizations together to understand and respond to challenges and explore possibilities.*[19]

Several of the principles upon which the Sustainable Communities Initiative is based are applicable to the development of social capital and the encouragement of greater citizen participation.

Gage has written that sustainable communities share these characteristics:

- *They build relationships among people, organizations, and institutions.* To develop trust, respect and networks for ideas, there must be strong relationships among people, organizations and institutions. These relationships cannot be bought or recruited from the outside; they are created through involvement in local government and community and civic groups.
- *They cooperate for the common good.* The ability and willingness of a group of people to come together to solve public problems is key to building sustainable communities. Communities must learn to use information networks, relationships, trust and skills to achieve what is best for the whole community.
- *They create opportunities for community learning.* Public spaces such as community centers, libraries, schools, farmers' markets, general stores, coffee shops, and parks are necessary to encourage the regular coming together of citizens and organizations to discuss public issues, learn, share concerns, make plans and have fun. Computer networks and local newspapers can serve as public spaces to encourage community conversations on issues.[20]

Early results from Owsley County are encouraging. When asked about why an Owsley County Action Team was formed in the first place, Jeanette Rogers, Director of Community Development for the group, said, "We got tired of being helped and decided it was time to help ourselves."

And help themselves they have. Over the past four years, the Owsley County group started a Goat Producers Association, a Vegetable Producers Association, and an education foundation called the Owsley County Fund for Excellence. It has also revived the Booneville/Owsley County Industrial Authority, assisted in funding a downtown development office which is currently establishing a Chamber of Commerce, and is working on establishing a Business Mentoring Network.

These accomplishments are impressive and suggest that Owsley Countians have found a successful approach to developing civic capital and more involved citizens. If this trend of "sustainable communities" catches on in cities and towns across our state, the future of civic participation in Kentucky will be bright indeed.

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[19] This and other information about the Owsley County Action Team was provided to the writer by Jeanne Gage. Similar material about sustainable communities and MACED's Sustainable Communities Initiative is reported in Gage, J. (1996, August/September). Building sustainable communities requires planning, cooperation, citizen participation. *Kentucky Journal*, 10-11.

[20] Adapted from Gage, J. Building sustainable communities requires planning, cooperation, citizen participation.

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Notes on the Future

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